ORDER NO. VRD8904M130

Service Manual

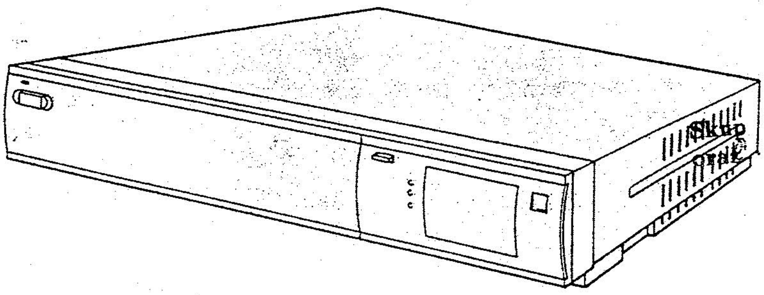
Video Cassette Recorder

Panasonic VHS PAL

HQ DIGITAL

NV-L28EG / NV-L28B

General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List



SPECIFICATIONS

ITEM	SPECIFICATION		
POWER	SOURCE:	220 V 50/60 Hz (NV-L28EG) 240 V 50/60 Hz (NV-L28B)	
	CONSUMPTION: 27 W		
RECORDING SYSTEM	2 rotary heads, helical scanning system		
	PAL		
TV TUNER SYSTEM	NV-L28EG	VHF I : CHE2～CHE4 VHF III: CHS4～CHE12 VHF H: CHS11～CHS41 (PAL/SECAM B) 75Ω unbalanced UHF: CH21～CH69 (PAL/SECAM G) 75Ω unbalanced	
	NV-L28B	UHF: CH21～CH69 (PAL I) 75Ω unbalanced	
RF OUT SYSTEM	UHF: CH36±4 (PAL/SECAM G) 73^{+3}_{-3} dBμ, 75Ω terminated (NV-L28EG) UHF: CH36±4 (PAL I) 74^{+3}_{-2} dBμ, 75Ω terminated (NV-L28B)		
VIDEO	HEADS:	4 rotary heads 1 pair for recording, playback (L-R heads) 1 pair for trick play (L′-R′ heads)	
	INPUT:	VIDEO IN Connector (BNC type) 1.0 Vp-p, 75Ω terminated EURO AV Connector (21 pin) 1.0 Vp-p, 75Ω terminated	
	OUTPUT:	EURO AV Connector (21 pin) 1.0 Vp-p, 75Ω terminated	

ITEM	SPECIFICATION	
AUDIO	HEAD:	1 Stationary head (Normal Audio)
	INPUT:	AUDIO IN Connector (Phono type) More than −10 dBV (316 mV), more than 50 kΩ EURO AV Connector (21 pin) More than −10 dBV (316 mV), more than 10 kΩ MICROPHONE JACK 70 dBV
	OUTPUT:	EURO AV Connector (21 pin) −6 dBV (500 mV), Less than 1 kΩ
TAPE FORMAT	VHS Cassette tape (Tape width 12.7 mm)	
TAPE SPEED	SP: 23.39 mm/s LP: 11.695 mm/s Record/Playback Time: SP: 4 hours with 240 min. type tape LP: 8 hours with 240 min. type tape FF/REW Time 5.5 min. with 180 min. type tape	
DIMENSIONS	380(W) × 82(H) × 356(D) mm	
WEIGHT	5.3 kg	
STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. Infra-red remote controller (Build in Digital Scanner type) 1 pc. Programme sheet 1 pc. AC Mains Lead	

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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REMARKS: (NV-L28EG ONLY)

1. It is possible to receive, record and playback colour broadcasts from East Germany (DDR) on this video recorder.
2. When a video tape that was recorded with a colour TV broadcast from East Germany on this VTR is played back on a SECAM (France) or a PAL VTR, the picture may be in black and white.
3. When a video tape recorded on a SECAM (France) VTR or a SECAM (France) pre-recorded video tape is played back on this VTR, the picture is in black and white.

INTRODUCTION

This service manual contains technical information which will allow service personnels to understand and service this model.
Section 1 presents you with some general information of features and controls, enabling you to become familiar with each function.
Section 2 contributes to your mechanical and electrical adjustment as well disassembly and replacement procedures.
In the case of very common information relating to other models like mechanical adjustments, please refer to each service manual.
Section 3 contains block diagrams which offers you information for checking and understanding each circuit. Schematic diagrams which give you detailed information such as waveforms, voltage data, function e.t.c...
Section 4 contains exploded views and parts list.
Please place orders using the parts list and not the drawing reference numbers.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

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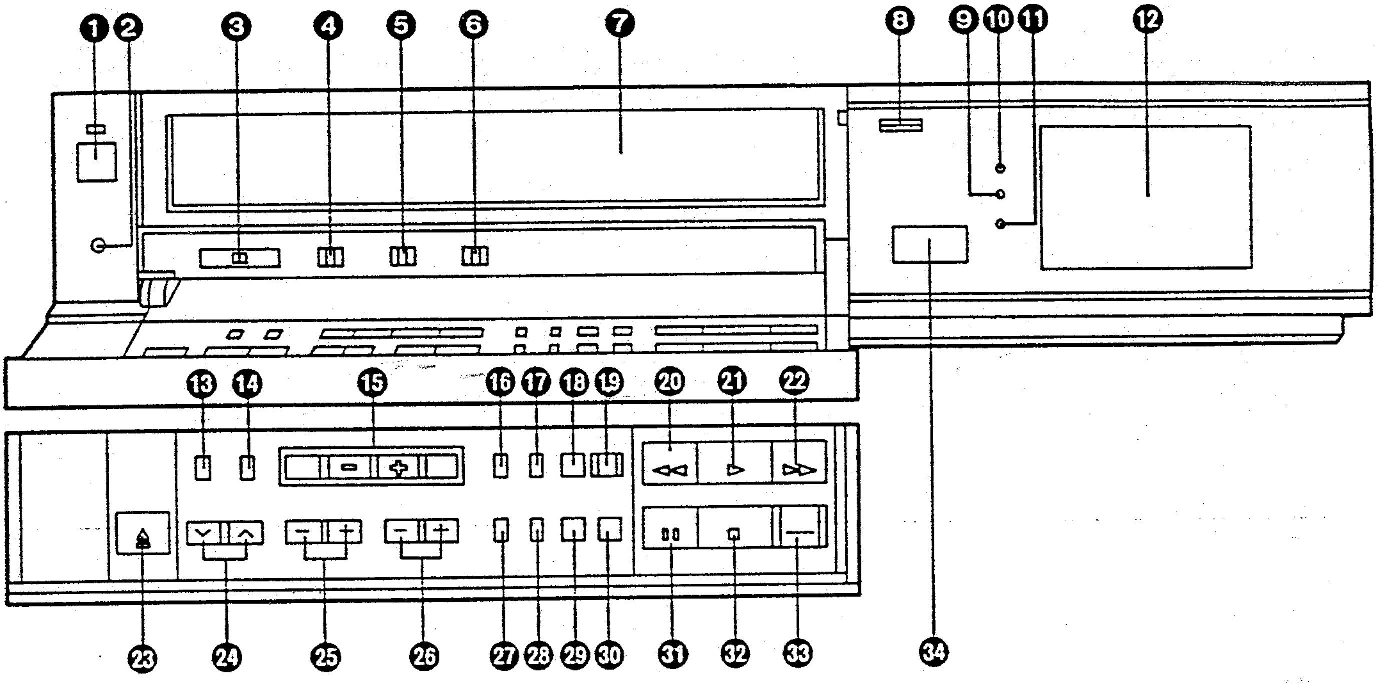
SECTION 1
GENERAL DESCRIPTIONS

1-1. CONTROLS AND COMPONENTS

FRONT



① VTR On/Off Switch with Indicator

② Microphone Input Socket

③ Picture Sharpness Control

④ Noise Filter/Edit Selector

EDIT ON: For editing operations such as dubbing.
OFF: For ordinary use of the VTR.
NOISE FILTER ON: For playback of tapes with inferior picture quality caused, for example, by repeated dubbing.

- When the Noise Filter/Edit Selector is set to "EDIT ON", the picture sharpness cannot be adjusted with the Picture Sharpness Control.

⑤ Digital Tracking Selector

Digital Tracking

ON: Select this position for digital tracking.
When playback is started after inserting a cassette, and the VTR is turned on, the Digital Tracking function will be activated automatically, the Digital Tracking Indicator will flash for several seconds, and the tracking will be adjusted automatically (after the adjustment, the Digital Tracking Indicator will remain lit).

- When the Digital Tracking Indicator is lit and the tape speed (SP/LP) is changed, the Digital Tracking function will be activated. However, when the VTR is operating in other modes than the playback, insert editing and audio dubbing, this function will not work.
- During playback, the Digital Tracking function will be activated whenever the playback changes over from an unrecorded part to a recorded part, provided the recorded part is longer than 4 seconds.

- When the picture is distorted by noise bars, press the Tracking (+) or (−) Button to select manual tracking and adjust with these two buttons. The Digital Tracking Indicator goes out.
  To change back to Digital Tracking, press the Tracking (+) and (−) Buttons simultaneously.

Manual Tracking

OFF: Select this position for manual tracking.

- When the playback picture is distorted by noise bars, adjust by pressing the Tracking (+) or (−) Button.
- To return the tracking control to the former setting, press the Tracking (+) and (−) Buttons simultaneously.

❻ Input Signal Selector

❼ Cassette Compartment

❽ Control Panel Open Button

❾ Audio Dubbing Indicator

❿ Insert Editing Indicator

⓫ Digital Tracking Indicator

⓬ Multi-Function Display

⓭ Clock Button

⓮ Preset/Fine/Normal Button

⓯ Timer Controls

⓰ AFC/VPS Button (NV-L28EG)

⓱ Clear Button (NV-L28EG)

Memory Button (NV-L28B)

⓲ Tape Speed Selector

⓳ Timer Record Button

⓴ Rewind ◀◀/Review ⊟ Button

㉑ Play/×2 Button

㉒ Fast Forward ▶▶/Cue ⊟ Button

㉓ Eject Button (▲)

㉔ Channel Selection Up and Down Buttons

㉕ OTR On Buttons

㉖ OTR Off Buttons

㉗ Clock/Counter Selector

㉘ Reset Button

㉙ Audio Dubbing Button

㉚ Insert Editing Button

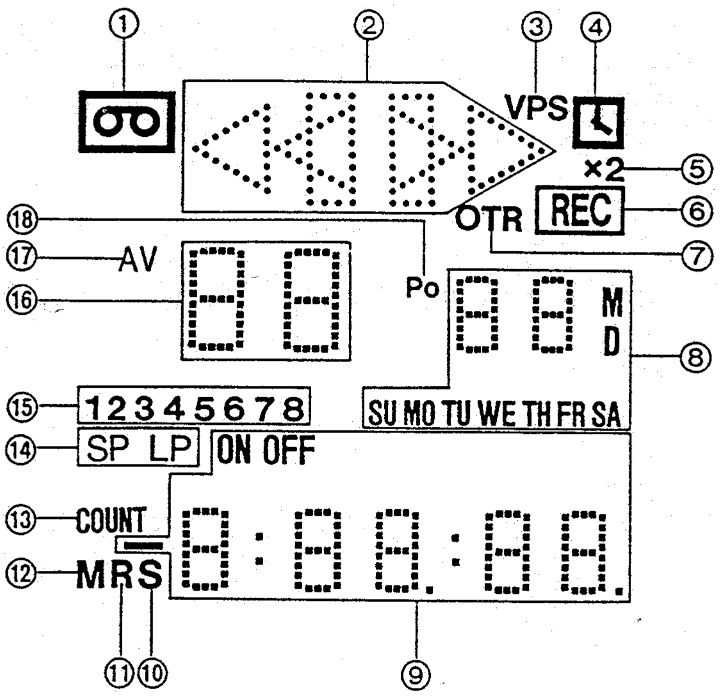
㉛ Pause/Still Button (❚❚)

㉜ Stop Button (■)

㉝ Record Button (●)

㉞ Infra-red Remote Control Receiver

Multi-Function Display



① Cassette-in Indicator

② Tape Running Display

③ VPS Indicator (NV-L28EG)

④ Timer Recording Indicator

⑤ Double Speed Indicator

⑥ Recording Indicator

⑦ OTR Indicator

⑧ Date Display

⑨ Clock/Counter Indicator

⑩ Search Indicator

⑪ Repeat Indicator

⑫ Memory Indicator

⑬ Counter Mode Indicator

⑭ Tape Speed Indicator

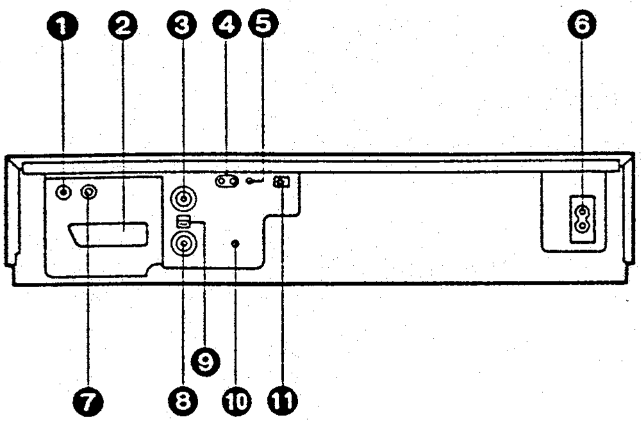
⑮ Timer Programme Number

⑯ Channel Display

⑰ Euro AV Indicator

⑱ Position Indicator

REAR



❶ Audio Input Socket

❷ AV Socket

❸ RF Output Socket

❹ Vertical Lock Adjustor

❺ Synchro Edit Socket

❻ AC In Socket

❼ Video Input Socket

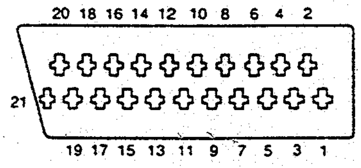
❽ RF Input Socket

❾ RF Signal Level Switch (NV-L28B)

❿ Video Playback Channel Adjustor

⓫ Test Signal Switch

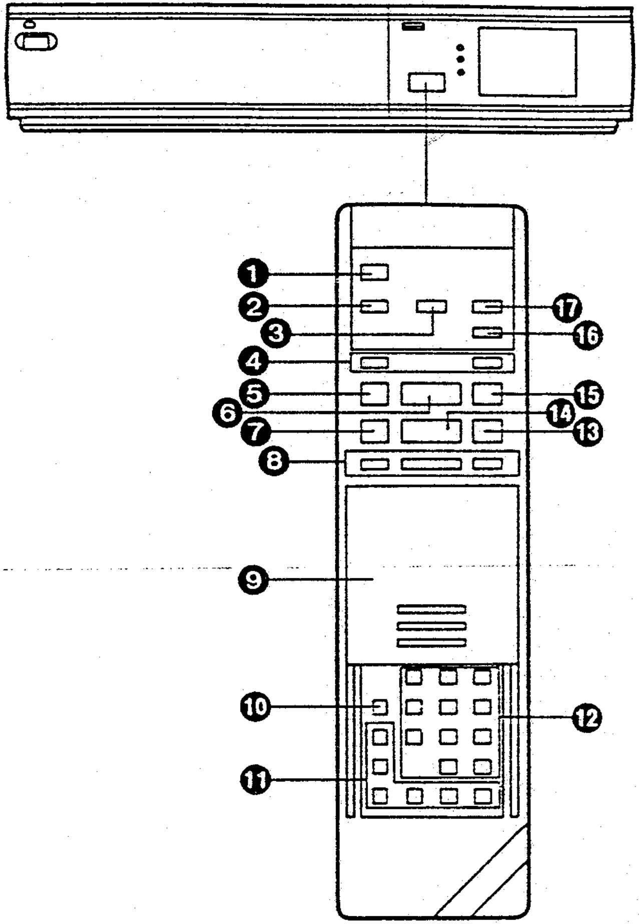
Connections of the AV Socket



1	AUDIO OUTPUT
2	AUDIO INPUT
3	AUDIO OUTPUT
4	AUDIO GND
5	No connection
6	AUDIO INPUT
7	No connection
8	SWITCHING VOLTAGE
9	No connection
10	No connection
11	No connection
12	No connection
13	No connection
14	No connection
15	No connection
16	No connection
17	VIDEO GND
18	No connection
19	VIDEO OUTPUT
20	VIDEO INPUT
21	GND

1-2. INFRA-RED REMOTE CONTROLLER

Part Number: VEQ0989 (NV-L28EG)
VEQ0988 (NV-L28B)



❶ **VTR On/Off Button**

❷ **Clock/Counter Selector**

❸ **Reset/Index Button**

❹ **Record Buttons (●)**

❺ **Pause/Still Button (❚❚)**

❻ **Stop Button (■)**

❼ **Rewind ◀◀/Review ⊟ Button**

❽ **Slow Buttons**

❾ **Mode Selector Cover**

❿ **Time Search Button**

⓫ **Digital Function Buttons**

⓬ **Programme Position (Channel) Selector Buttons**

⓭ **Fast Forward ▶▶/Cue ⊟ Button**

⓮ **Play/×2 Button (▶)**

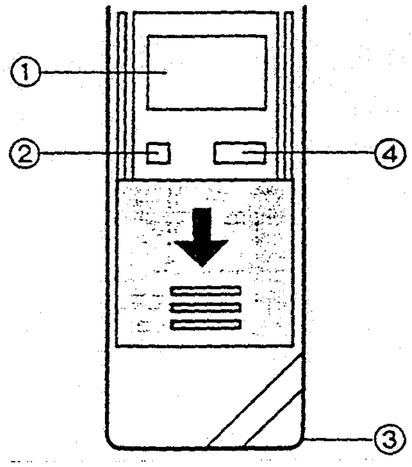
⓯ **Still Advance Button (II▶)**

⑯ Reverse Play Button

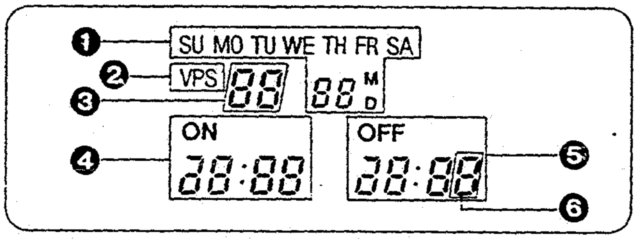
⑰ Memory/Repeat/Search Button

Use as Digital Scanner

Slide the Mode Selactor Cover Downward.



① **Bar Code Reader Display**



- ❶ Date Display
- ❷ VPS Indicator (NV-L28EG)
- ❸ Channel Display
- ❹ Start Time Display
- ❺ End Time Display
- ❻ Check Indicator

② **Digital Scanner On/Off Button**

③ **Bar Code Reading Section**

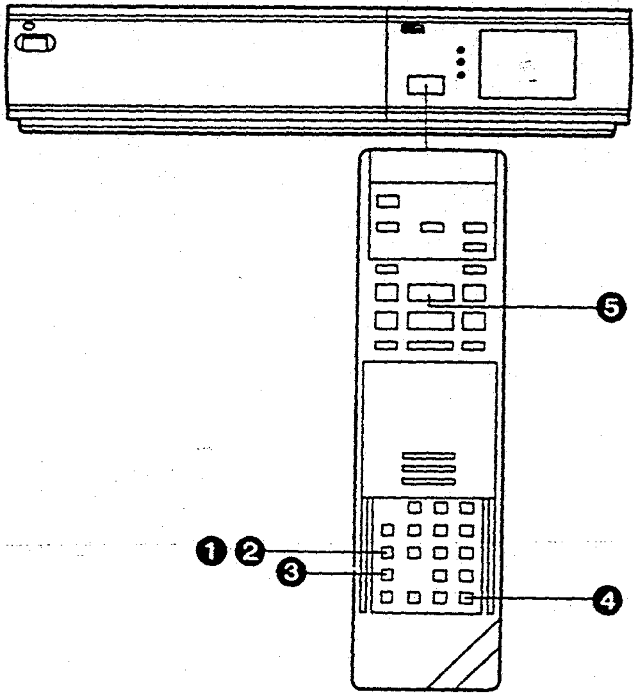
④ **Transmit Button**

Note:
To be able to use the unit as Remote Controller, press the Digital Scanner On/Off Button (the indications in the LCD Display will disappear).

1-3. DIGITAL SPECIAL EFFECTS

The special digital picture effects can be enjoyed by using the Remote Controller.

Picture-in-Picture

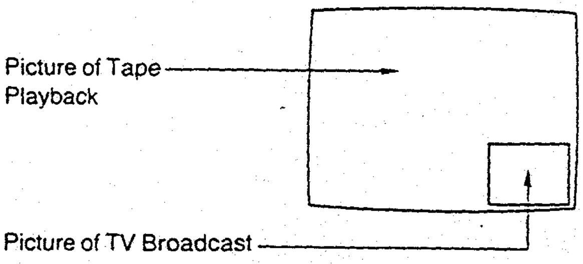


This function makes it possible to watch a TV programme while playing back a tape.

- The Picture-in-Picture function works in any of the playback functions: normal playback, Cue, Review, Still and Slow.

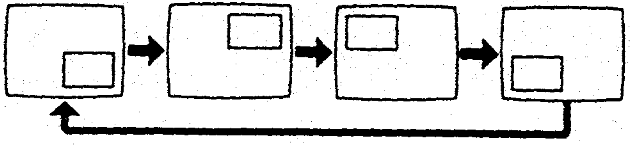
❶ When the "P in P" Button is pressed during playback of a tape, a small picture of the TV channel selected on the VTR appears in the bottom right corner of the screen.

- Only the sound of the large picture is reproduced.



- The TV channel can be changed with the Programme Position Selector Buttons either on the Remote Controller or on the VTR itself.

❷ By pressing the "P in P" Button repeatedly, the position of the small picture can be changed as follows.



❸ By pressing the ⧉/■ Button, the large picture can be changed into the small one and vice versa.
- Depending on the TV set used, there may be some momentary picture distortion when they are exchanged.

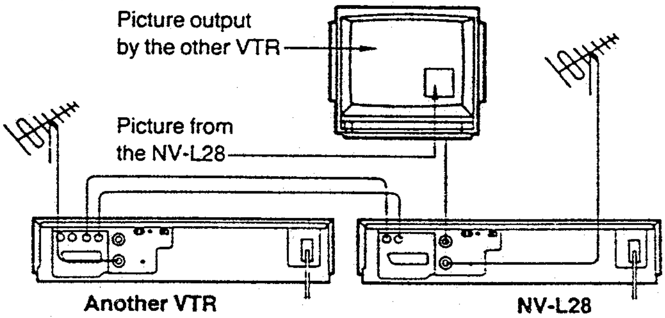
❹ To return to the normal (single-picture) playback, press the CLEAR Button.

❺ To watch the TV broadcast alone on the whole screen, press the STOP Button.

- When the 3-SCREEN Button is pressed during the Picture-in-Picture playback, the small picture will be displayed in the 3-Screen Multi Select mode.
- When the F. STORE Button is pressed during the Picture-in-Picture playback, the small picture will be displayed in the ¼-Screen Frame Store mode.

TV in TV

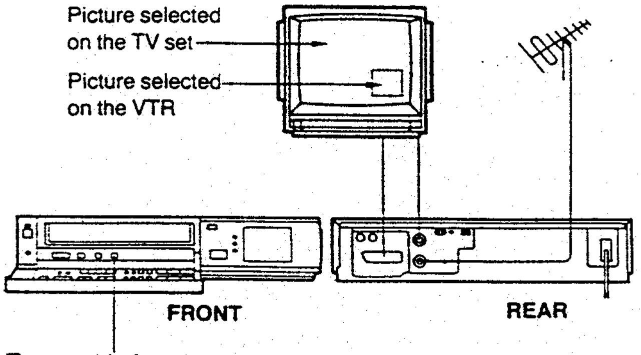
① When the NV-L28 is connected to another VTR and a TV set, as shown below, it is possible to watch two TV programmes simultaneously on the TV screen. The operation of this TV-in-TV function is the same as the Picture-in-Picture function.



When the above connection is used for dubbing, it is possible to simultaneously confirm both the picture from the playback VTR and the picture from the recording VTR on the same screen.

- The TV-in-TV functions also works when the VTRs are connected via AV cable.

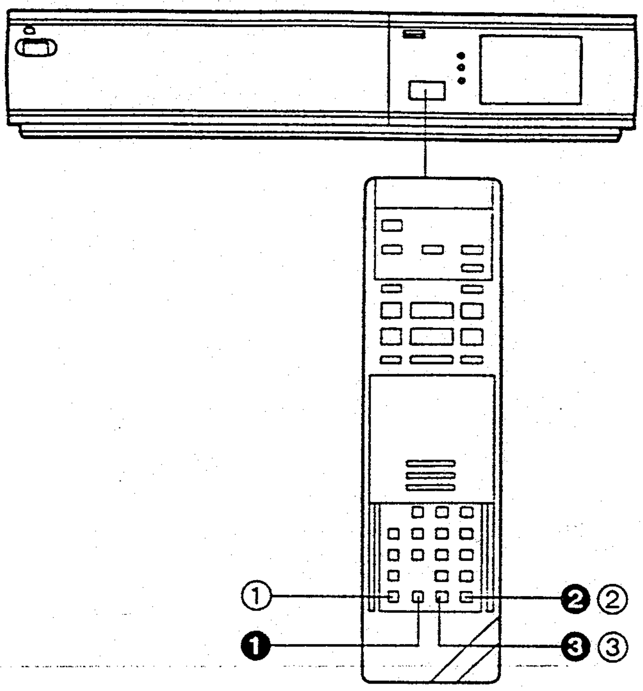
② When the NV-L28 is connected to a TV set, it is possible to watch two TV programmes simultaneously on the TV screen.



To use this function, select the Input Signal Selector to AV position.

- It is possible that the TV-in-TV function will not work with certain TV sets. In such a case, use the connection shown in step ①.

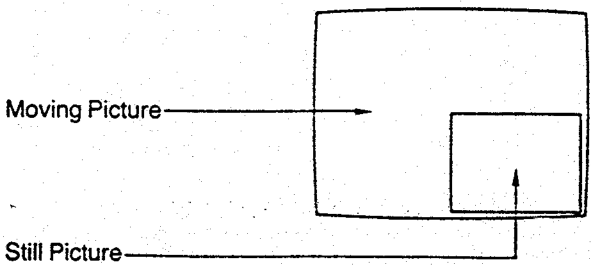
1/4-Screen Frame Store & 3-Screen Multi Select



(1/4-Screen Frame Store)

This function can be used to freeze the action at any desired moment and superimpose it as a still picture in ¼-screen size onto the moving playback picture. The reproduction of the sound of the moving picture (full screen) will continue normally. In addition to the playback of video tapes, this ¼-Screen Frame Store function can also be used for TV broadcasts (received with the TV tuner in the VTR) as well as for pictures input from an external source.

❶ When the F. STORE Button is pressed, a still-picture of that moment's action will appear in the bottom right quarter of the screen.



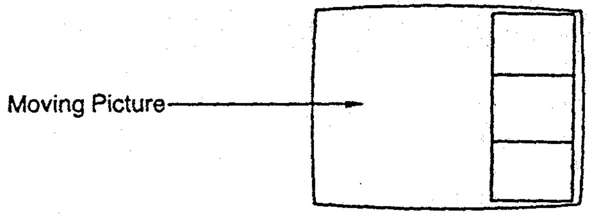
- Every time the F. STORE Button is pressed, the moving picture of this moment will be displayed as a still-picture.
- When the button is kept pressed, still pictures taken at half-second intervals will be displayed for a strobe-like effect.

❷ To return to the former condition (single-picture playback or TV broadcast), press the CLEAR Button.

❸ If the RECALL Button is pressed, the screen will return to the condition before the CLEAR Button was pressed.

(3-Screen Multi Select)

① When the 3-SCREEN Button is pressed, three small pictures frames will appear on the right side of the screen and can be filled with still-pictures from top to bottom.



- Press the 3-SCREEN Button successively at the scenes which you want to display as still-pictures. The still-pictures will be displayed and updated from top to bottom.
- When this button is kept pressed, the still-pictures will be displayed in 0.3-second intervals.

② To return to the former condition (single-picture playback or TV broadcast), press the CLEAR Button.

③ If the RECALL Button is pressed, the screen will return to the condition before the CLEAR Button was pressed.

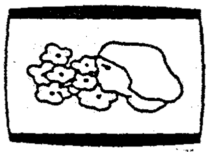
- When "S" Mark in the Multi-Function Display is lit, the Digital Function Buttons cannot be operated. If you want to use the Digital Functions, press the Memory/Repeat/Search button (the "S" Mark will disappear).
- NV-L28EG
  The digital special effects cannot be used for SECAM (OST) signals.
- When playing back tapes recorded in the NTSC system, the digital functions cannot be used.

About the Superimposed Pictures

- The picture may vibrate vertically, be distorted and the colour may be unstable. However, this is not due to any malfunction.
- Depending on the type of TV set used, the small pictures may not display the full picture content.
- When the moving picture is in black-and-white, the small pictures are also in black-and-white.
- When the special playback signals (Cue, Review, Still, Slow etc.) are being input from another VTR, the small picture may be distorted.

1-4. NTSC PLAYBACK

Tapes recorded in the NTSC system can be played back with this VTR via a PAL system TV set.



- Depending on the TV set used, the picture may shrink vertically and black bars may appear both at the top and bottom of the screen.
  This is not an indication of a malfunction.
- And the playback picture may roll up or down, if the TV set is equipped with a V-HOLD control, it may be possible to stop the picture movement by adjusting this control.
- The special playback functions (except normal playback) cannot be used for NTSC recordings. This is not an indication of a malfunction.
- Recording in the NTSC system is not possible with this VTR. Insert editing and audio dubbing also would not function correctly, so please do not operate these functions.

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOW CHART

This flowchart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.

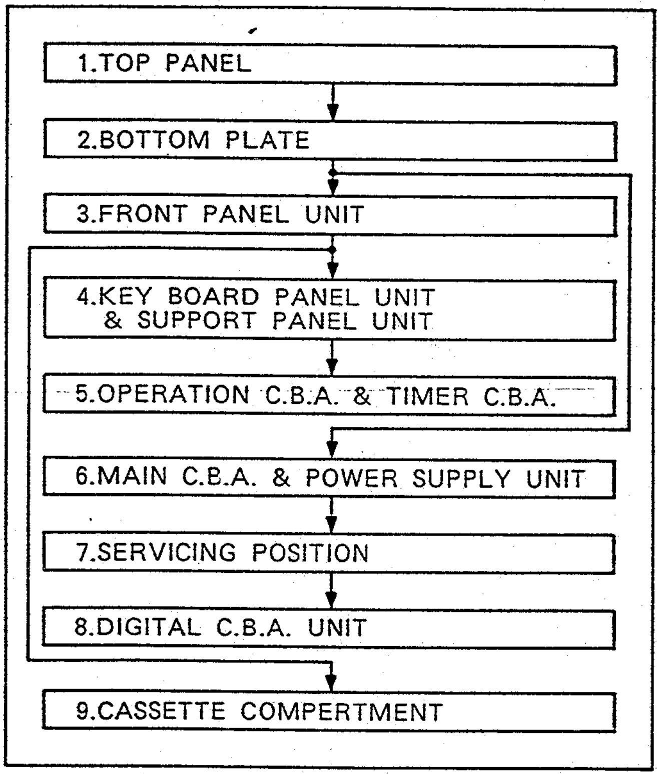

1.TOP PANEL
2.BOTTOM PLATE
3.FRONT PANEL UNIT
4.KEY BOARD PANEL UNIT & SUPPORT PANEL UNIT
5.OPERATION C.B.A. & TIMER C.B.A.
6.MAIN C.B.A. & POWER SUPPLY UNIT
7.SERVICING POSITION
8.DIGITAL C.B.A. UNIT
9.CASSETTE COMPERTMENT

Fig.D1

2-1-2. DETAIL OF DISASSEMBLE METHOD

1. REMOVAL OF THE TOP PANEL

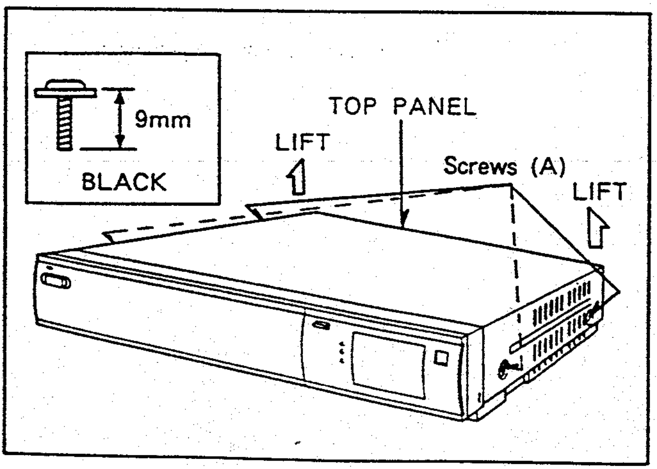

9mm
BLACK
TOP PANEL
LIFT
Screws (A)
LIFT

Fig. D2

Remove..... 4 Screws(A): NV-L28EG
2 Screws(A): NV-L28B

2. REMOVAL OF THE BOTTOM PLATE

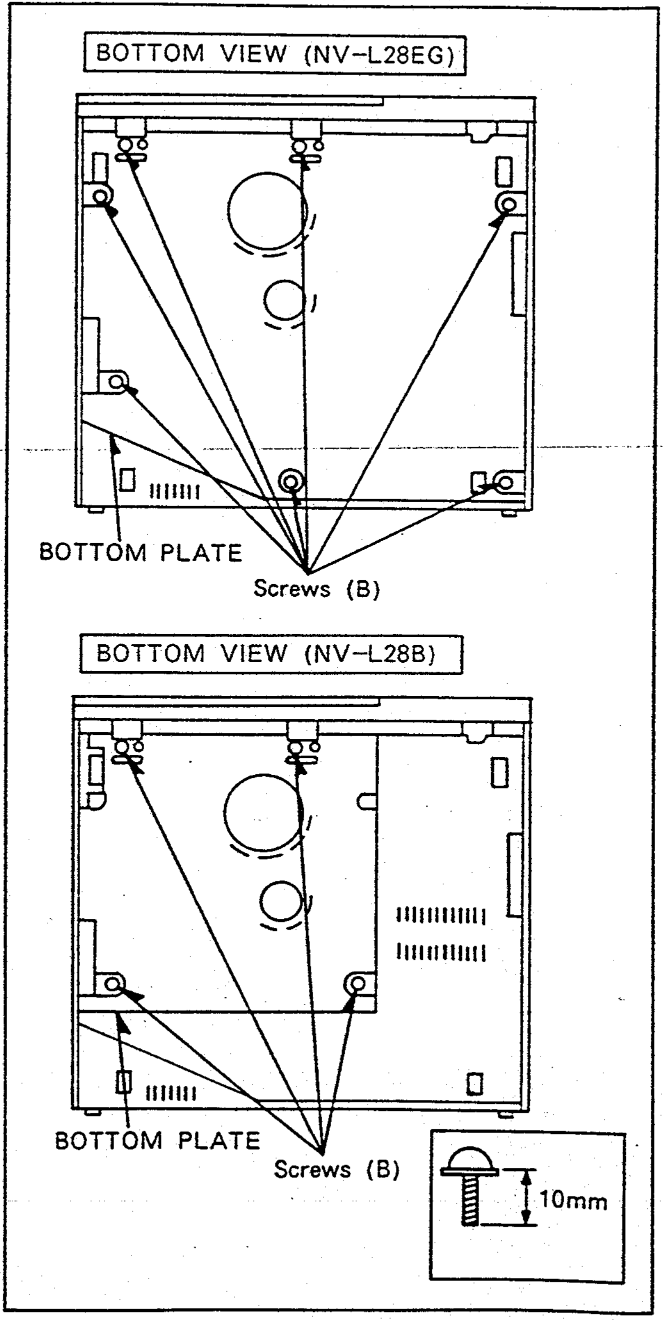

BOTTOM VIEW (NV-L28EG)
BOTTOM PLATE
Screws (B)
BOTTOM VIEW (NV-L28B)
BOTTOM PLATE
Screws (B)
10mm

Fig. D3

Remove..... 7 Screws(B): NV-L28EG
4 Screws(B): NV-L28B

3. REMOVAL OF THE FRONT PANEL UNIT

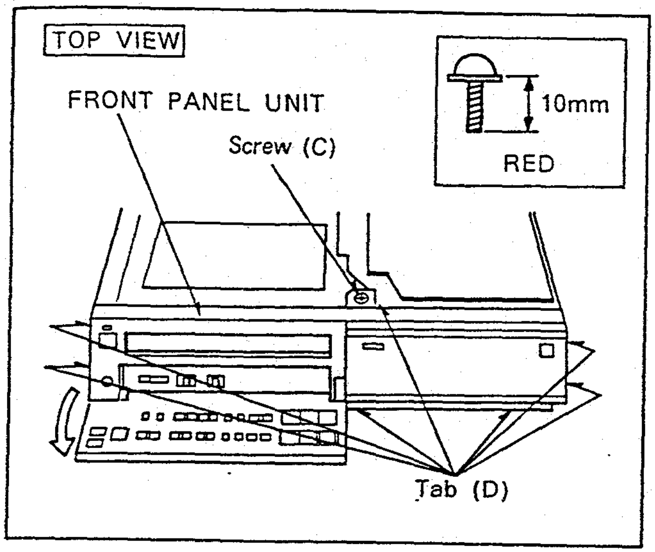

TOP VIEW
FRONT PANEL UNIT
Screw (C)
10mm
RED
Tab (D)

Fig. D4

Remove ... Screw (C)
Unlock ... 7 Tabs (D)

4. REMOVAL OF THE KEY BOARD PANEL UNIT AND SUPPORT PANEL UNIT

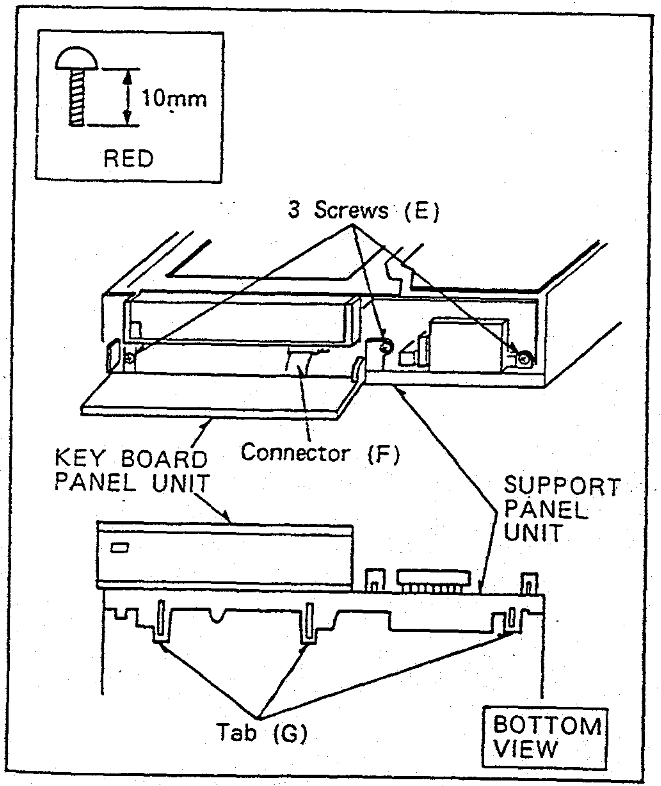

10mm
RED
3 Screws (E)
KEY BOARD PANEL UNIT
Connector (F)
SUPPORT PANEL UNIT
Tab (G)
BOTTOM VIEW

Fig. D5

Remove ... 3 Screws (E)
Disconnect ... Connector (F)
Unlock ... 3 Tabs (G)

5.REMOVAL OF THE OPERATION C.B.A. AND TIMER C.B.A.

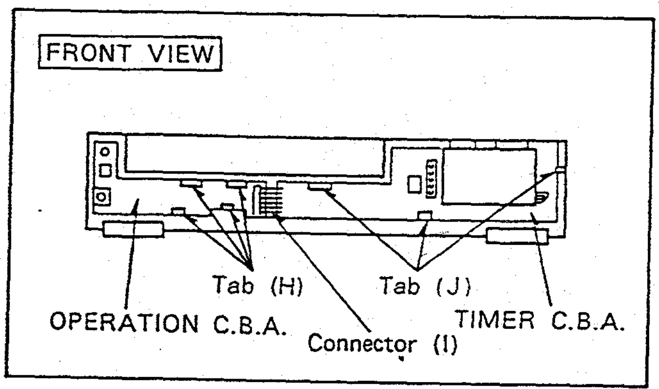

FRONT VIEW
Tab (H)
Tab (J)
OPERATION C.B.A.
Connector (I)
TIMER C.B.A.

Fig. D6

REMOVAL OF THE OPERATION C.B.A.

Unlock ... 4 Tabs (H)

REMOVAL OF THE TIMER C.B.A.

Unlock ... 3 Tabs (J)
Disconnect ... Connector (I)

6. REMOVAL OF THE MAIN C.B.A. AND POWER SUPPLY UNIT

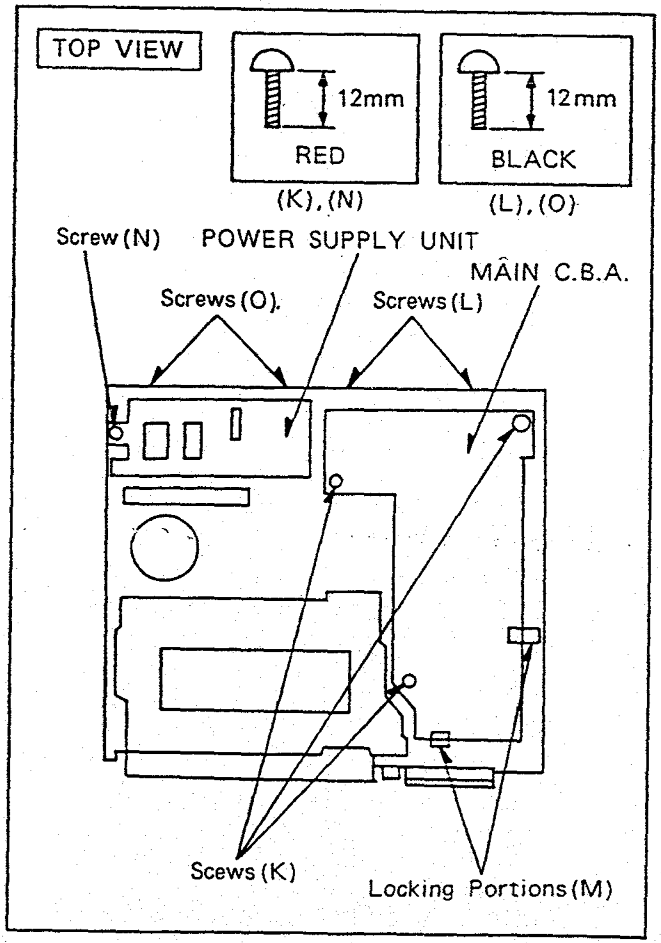

TOP VIEW
12mm
RED
(K),(N)
12mm
BLACK
(L),(O)
Screw(N)
POWER SUPPLY UNIT
MAIN C.B.A.
Screws(O)
Screws(L)
Scews(K)
Locking Portions(M)

Fig.D7

REMOVAL OF THE MAIN C.B.A.

Remove..... 3 Screws (K) and 2 Screws (L)
Unlock..... 2 Locking Portions (M)

REMOVAL OF THE POWER SUPPLY UNIT

Remove.....Screw(N) and 2 Screws(O)

7.SERVICING

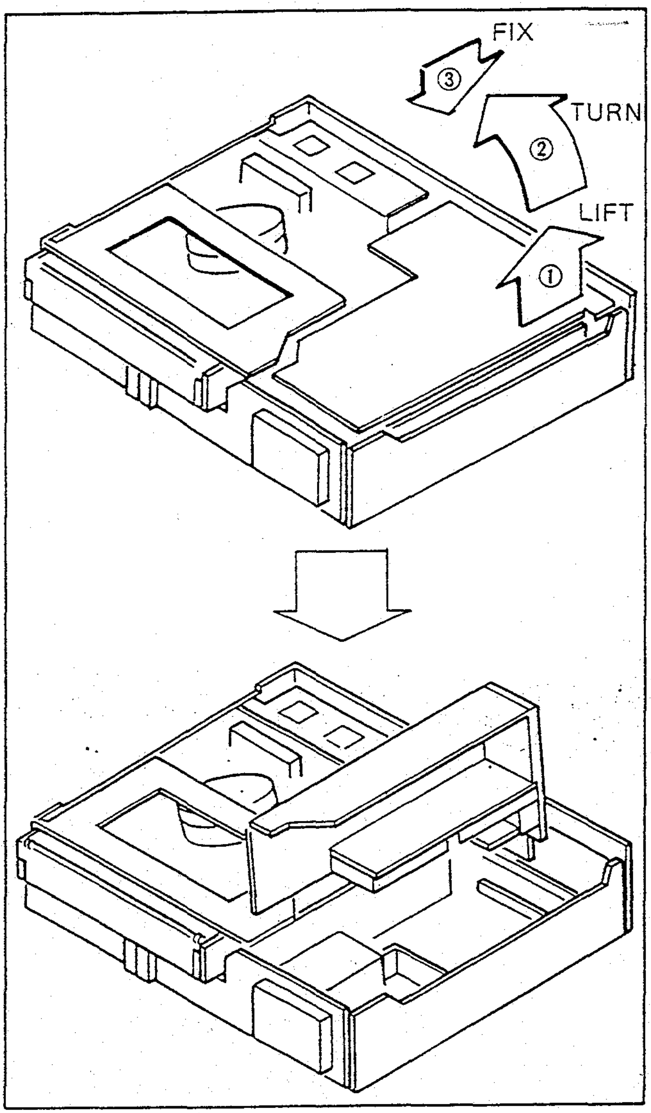

FIX
③
TURN
②
LIFT
①

Fig.D8

8.REMOVAL OF THE DIGITAL C.B.A. UNIT

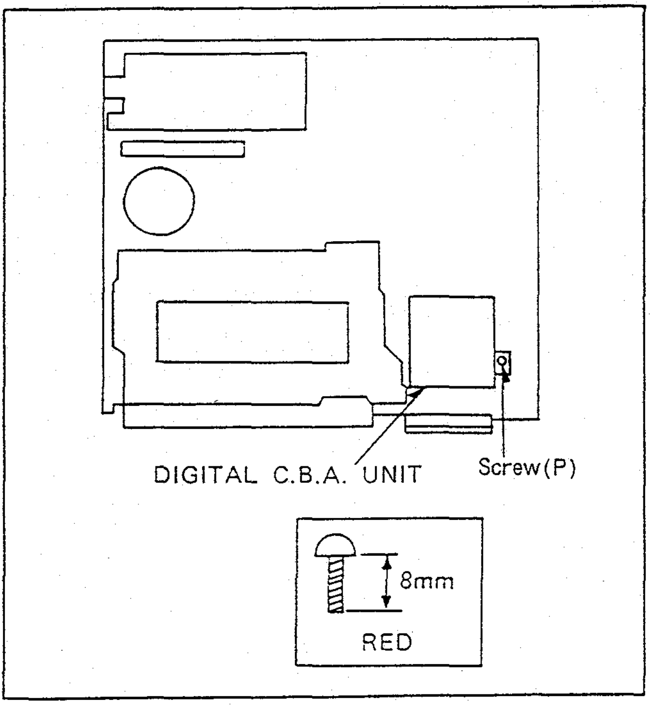

DIGITAL C.B.A. UNIT
Screw(P)
8mm
RED

Fig.D9

9. REMOVAL OF THE CASSETTE COMPARTMENT

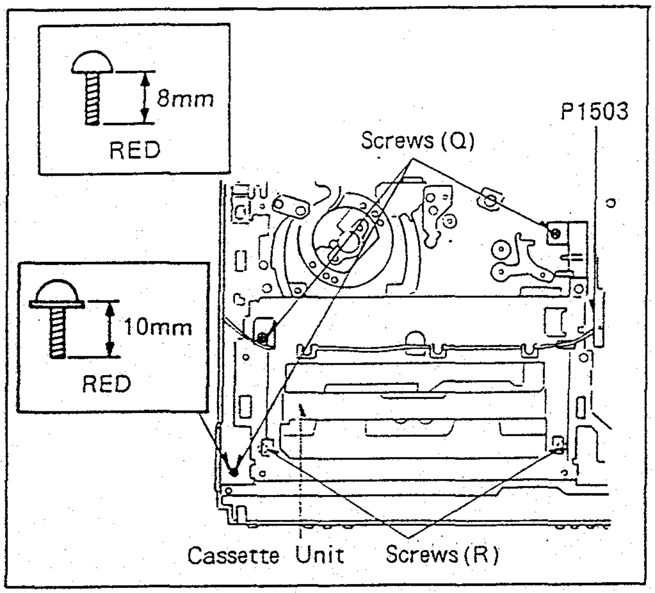

8mm
RED
10mm
RED
Screws (Q)
P1503
Cassette Unit
Screws(R)

Fig.D10

Remove the 3 screws(Q).
Slide the cassette holder until appearing 2 screws(R) by turning (clockwise) the Capstan Rotor Unit *(located in the bottom side as shown* in Fig.D11) and remove the 2 screws(R).
Remove the wire cable from connector P1503 mounted on Take-up Photo Tr. C.B.A. , then *carefully pull out the Cassette Compartment.*

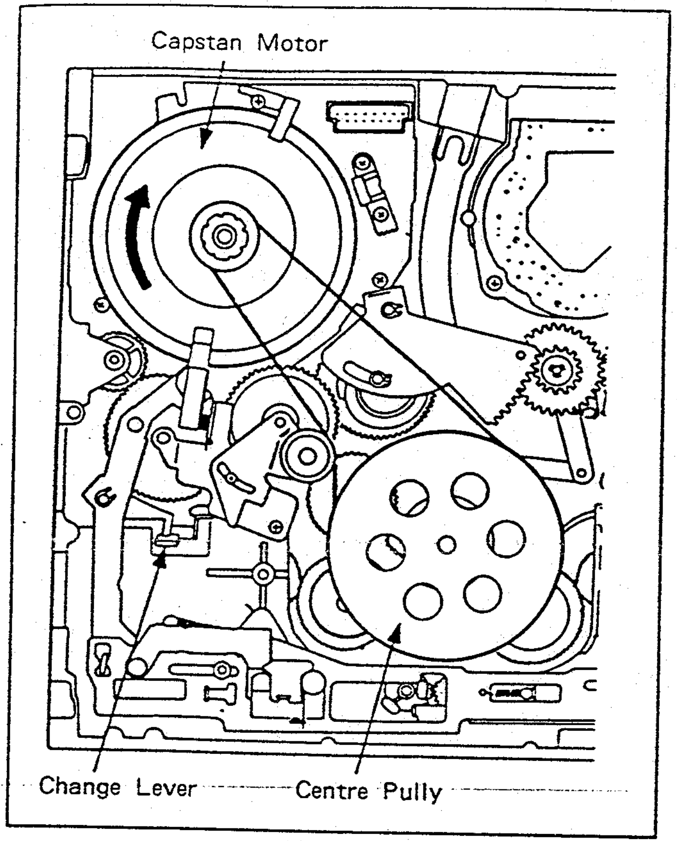

Capstan Motor
Change Lever
Centre Pully

Fig.D11

NOTE:
When restalling the Cassette Compartment, mechanical adjustment (alignment) must be performed for correct working refer to Service Manual (G Mechanical Chassis) (Order No.VRD8701105, item 3–10.mechanical adjustment (alignment)).

2–1–3.How to open the Remote Control Unit

1.Removal of the sensor cap.

Turn the sensor cap counterclockwise(90 degrees) and pull the sensor cap to remove as shown in Fig D12.

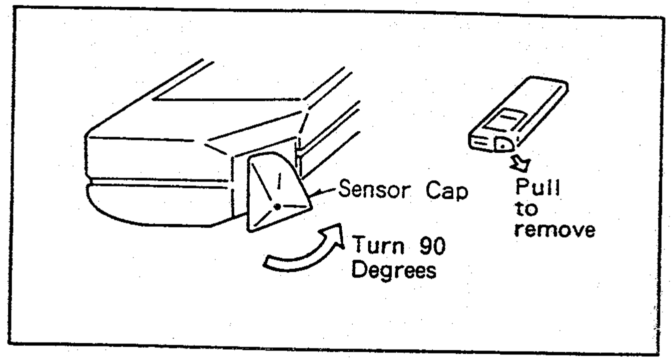

Sensor Cap
Pull to remove
Turn 90 Degrees

Fig.D12

2.Removal of the Battery Cover

Press the part of battery cover indicated by the arrow and lift off the cover.
Then take out batteries.

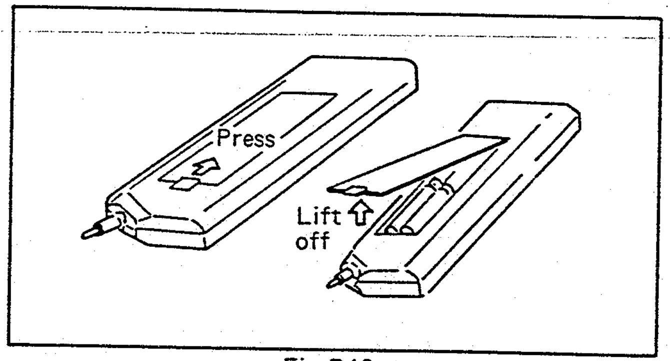

Press
Lift off

Fig.D13

3.Removal of the bottom case.

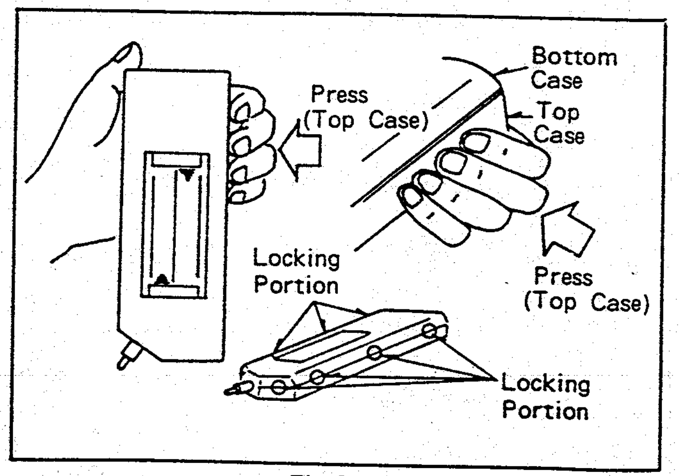

Press (Top Case)
Bottom Case
Top Case
Locking Portion
Press (Top Case)
Locking Portion

Fig.D14

Press the side of Top case with left hand as shown in Fig.D14 by big force so that the top case is bending.
Then insert your finger of right hand to gap between top case and bottom case while keep pressing by your left hand as shown in Fig.D15.

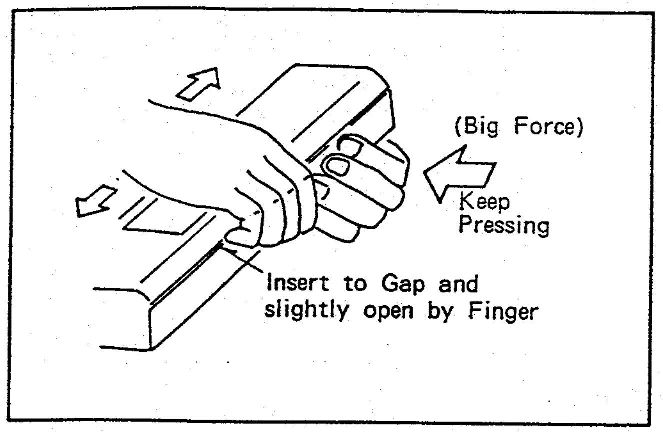

(Big Force)
Keep Pressing
Insert to Gap and slightly open by Finger

Fig.D15

First slightly open the bottom case by your inserted right hand and move your right hand to extend the open portion.
When unlock the 3 locking portion(refer to Fig.D14),the bottom case is removed easily.
If you can not open,please try opposite side with same way.

4.Removal of the sensor C.B.A.

Remove 2 screws as shown in Fig.D16.

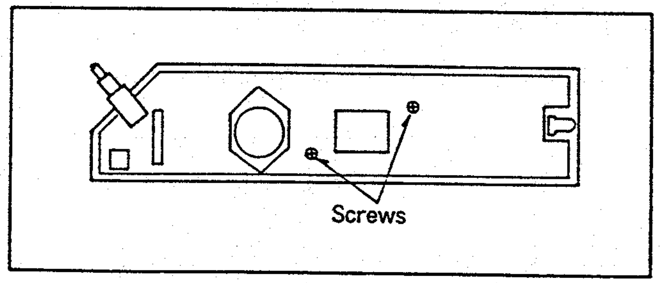


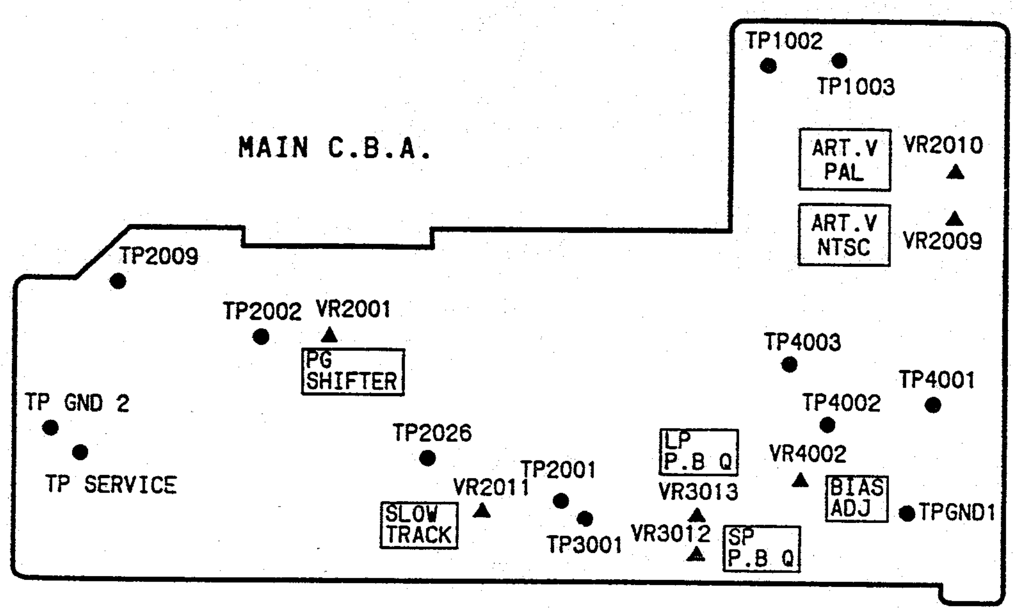
Fig.D16

2-2. MECHANICAL ADJUSTMENT PROCEDURES

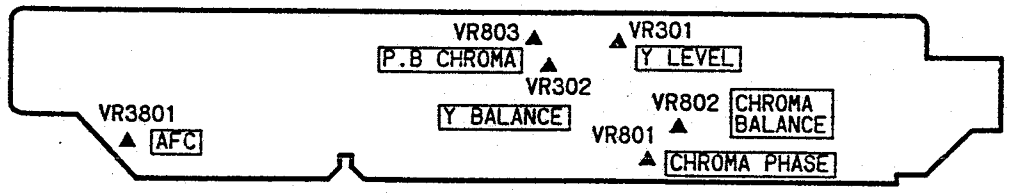
This mechanical chassis of these models NV–L28EG/B is the same as G–REV. Mechanical Chassis.
Therefore please refer to the Service Manual G–REV. Mechanical Chassis (Order No. VRD8901M101).

LOCATION OF TEST POINTS & CONTROLS

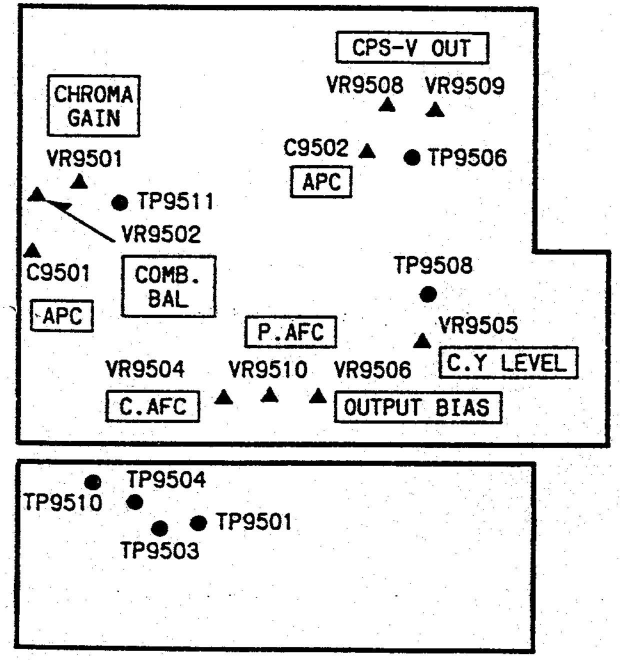
MAIN C.B.A.


TP1002
TP1003
ART.V PAL
VR2010
ART.V NTSC
VR2009
TP2009
TP2002
VR2001
PG SHIFTER
TP4003
TP4001
TP GND 2
TP2026
TP4002
TP SERVICE
TP2001
LP P.B Q
VR4002
VR2011
VR3013
BIAS ADJ
TPGND1
SLOW TRACK
TP3001
VR3012
SP P.B Q

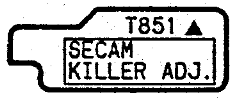
SUB MAIN C.B.A.


VR803
P.B CHROMA
VR301
Y LEVEL
VR302
Y BALANCE
VR802
CHROMA BALANCE
VR3801
AFC
VR801
CHROMA PHASE

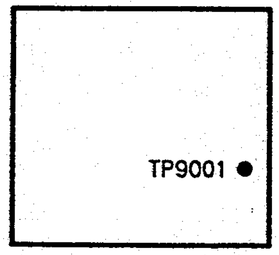
SUB DIGITAL C.B.A.


CPS-V OUT
VR9508
VR9509
CHROMA GAIN
VR9501
C9502
TP9506
APC
TP9511
VR9502
C9501
COMB. BAL
TP9508
APC
P.AFC
VR9505
C.Y LEVEL
VR9504
VR9510
VR9506
C.AFC
OUTPUT BIAS
TP9504
TP9510
TP9501
TP9503

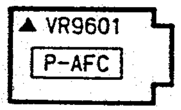
DDR SECAM
PACK C.B.A.
(NV-L28EG)


T851
SECAM KILLER ADJ.

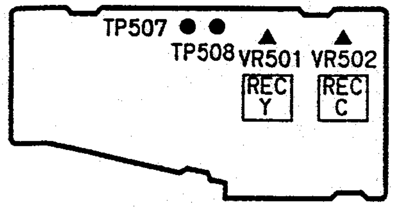
MAIN DIGITAL C.B.A.



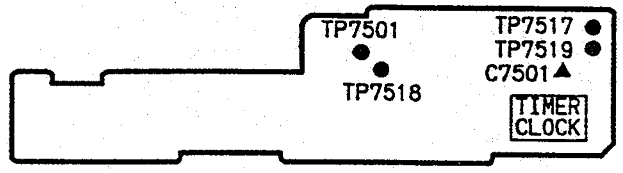
AFC C.B.A.


VR9601
P-AFC

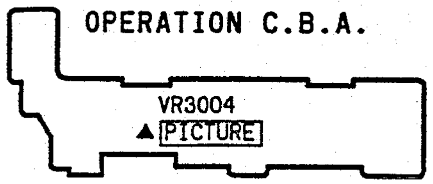
HEAD AMP C.B.A.


TP507
TP508
VR501
VR502
REC Y
REC C

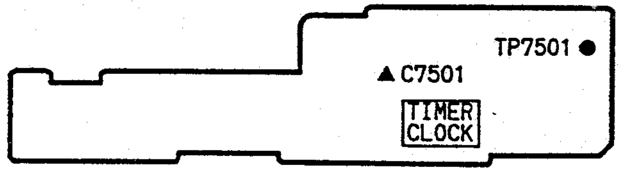
TIMER C.B.A.(NV-L28EG)


TP7501
TP7517
TP7519
C7501
TP7518
TIMER CLOCK

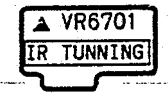
OPERATION C.B.A.


VR3004
PICTURE

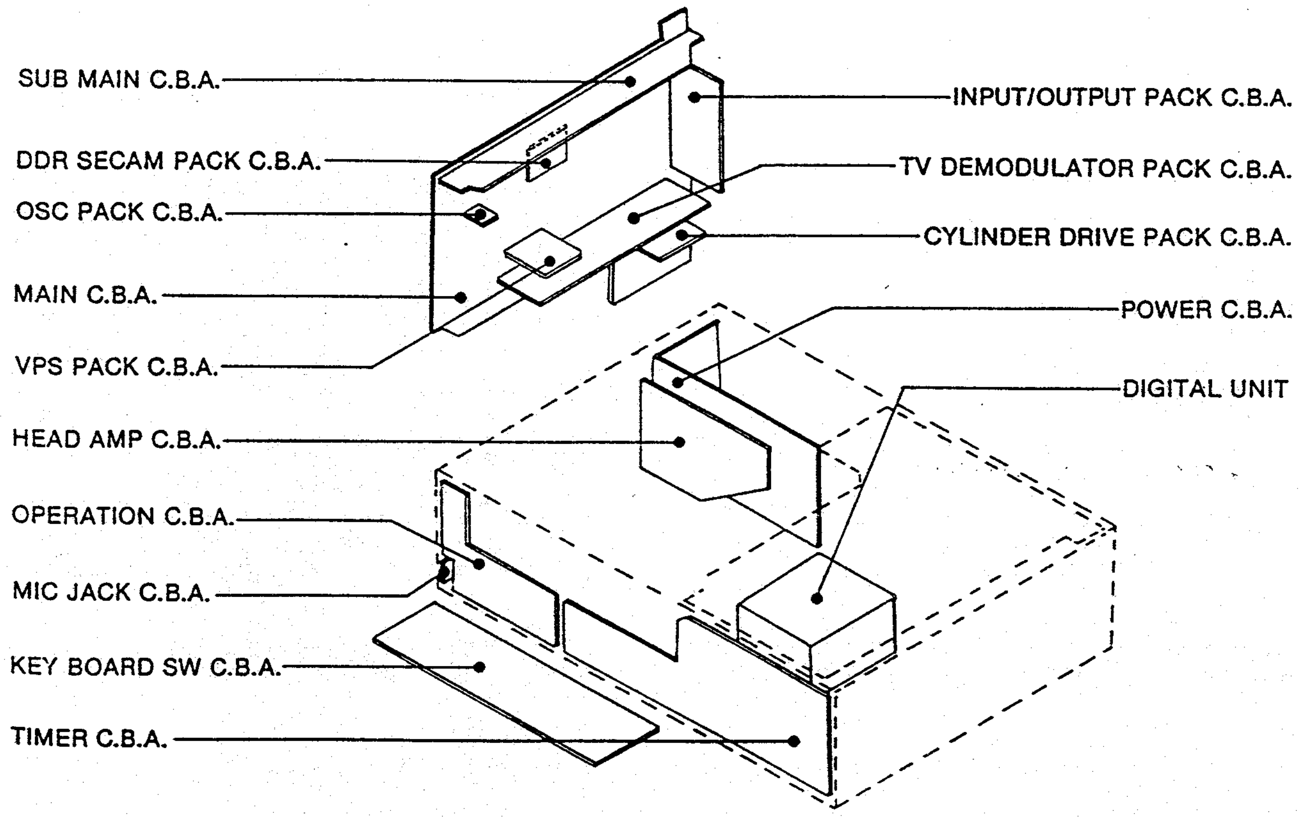
TIMER C.B.A.(NV-L28B)


TP7501
C7501
TIMER CLOCK

IR RECEIVER C.B.A.


VR6701
IR TUNNING

CIRCUIT BOARD LAYOUT


SUB MAIN C.B.A.
INPUT/OUTPUT PACK C.B.A.
DDR SECAM PACK C.B.A.
TV DEMODULATOR PACK C.B.A.
OSC PACK C.B.A.
CYLINDER DRIVE PACK C.B.A.
MAIN C.B.A.
POWER C.B.A.
VPS PACK C.B.A.
DIGITAL UNIT
HEAD AMP C.B.A.
OPERATION C.B.A.
MIC JACK C.B.A.
KEY BOARD SW C.B.A.
TIMER C.B.A.

2-3. ELECTRICAL ADJUSTMENT PROCEDURES

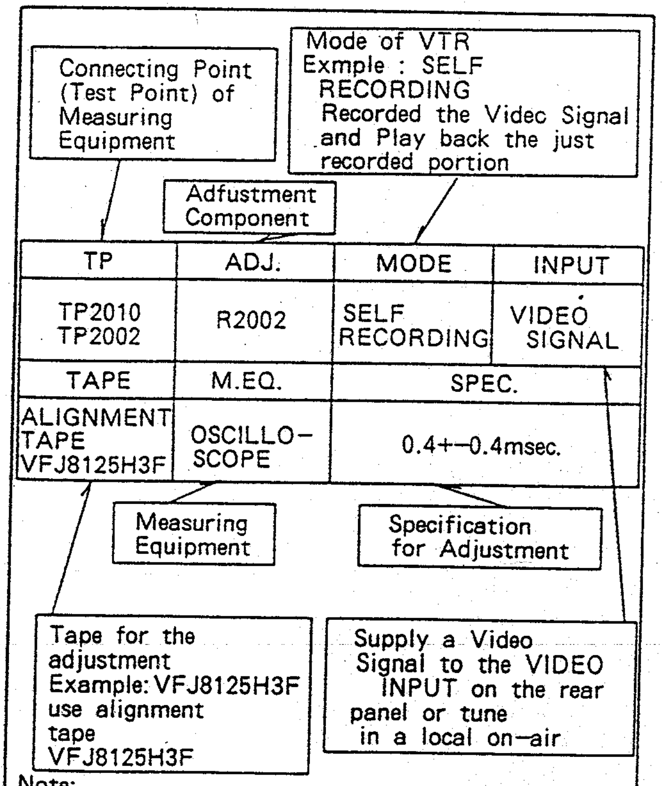
This section provides complete electrical adjustment procedures which may be required for electronic circuits of VHS Video Cassette Recorders NV–L28EG/B.

2–3–1. TEST EQUIPMENTS

To perform the electrical adjustments completely, following equipments are required.

1. VTVM (Vacuum Tube Volt Meter) and DVM (Digital Volt Meter)
   Voltage Range: 0.001～50V
2. Dual–Trace Oscilloscope
   Voltage range: 0.005～50V/div.
   Frequency Range: DC～30MHz
   Probes: 10:1
3. Frequency counter
   Frequency Range: 0～10MHz
4. Signal Generator (Sinewave)
   Frequency Range: 0～500KHz
5. Video Sweep Generator
   Frequency Range: 0～10MHz
6. Colour Monitor TV
7. Plaastic Tip Driver
8. VHS Alignment Tape (VFJ8125H3F)
9. Pattern Generator

2–3–2. HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Mode of VTR
Exmple : SELF RECORDING
Recorded the Videc Signal and Play back the just recorded portion
Adfustment Component
Measuring Equipment
Specification for Adjustment
Tape for the adjustment
Example: VFJ8125H3F use alignment tape VFJ8125H3F
Supply a Video Signal to the VIDEO INPUT on the rear panel or tune in a local on–air

TP	ADJ.	MODE	INPUT
TP2010 TP2002	R2002	SELF RECORDING	VIDEO SIGNAL
TAPE	M.EQ.	SPEC.	
ALIGNMENT TAPE VFJ8125H3F	OSCILLO–SCOPE	0.4+–0.4msec.	

Note:
If ☒ appears in any block, this means it is not used or not important.

Fig. E1

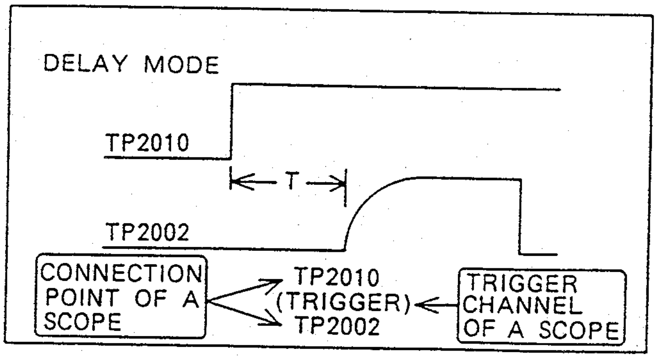

DELAY MODE
TP2010
T
TP2002
CONNECTION POINT OF A SCOPE
TP2010
(TRIGGER)
TP2002
TRIGGER CHANNEL OF A SCOPE

Fig. E2.

NOTE: Before the electrical adjustment, set the VHS VTR as following conditions except for especial instructions in each adjustment item.

1) Picture Sharpness Control...Centre Fix Position
2) Test Signal Switch...OFF Position
3) Noise Filter/Edit Switch...OFF Position
4) Digital Tracking ON/OFF Switch...ON Position

SERVO Section

2–3–3. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 VIDEO LINE OUT	VR2001	PLAYBACK	☒
TAPE	M. EQ.	SPEC.	
ALIGNMENT TAPE VFJ8125H3F	OSCILLO–SCOPE	7.0+–0.5 (H)	

1. Connect the Oscilloscope to TP2001 and VIDEO LINE OUT.
2. Playback the VHS Alignment Tape (VFJ8125H3F)
3. Adjust VR2001 so that the phase difference becomes 7.0+–0.5 (H) as shown in Fig. E3.

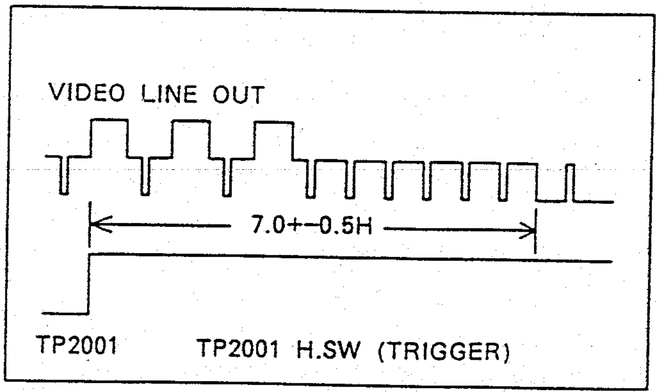

VIDEO LINE OUT
7.0+–0.5H
TP2001
TP2001 H.SW (TRIGGER)

Fig. E3

2–3–4. ARTIFICIAL V-SYNC FOR PAL ADJUSTMENT

TP	ADJ.	MODE	INPUT
MONITOR SCREEN	VR2010 (SP)	SP STILL	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	MONITOR	NO V–DANCING	

1. Record the Video Signal in SP Mode and playback the just recorded portion. Then place the unit in STILL Mode.
2. Adjust VR2010 so that the V–Dancing does not appear on the Monitor Screen.

2–3– 5.ARTIFICIAL V-SYNC FOR ARTIFICIAL NTSC ADJUSTMENT

TP	ADJ.	MODE	INPUT
MONITOR SCREEN	VR2009	SP STILL	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	MONITOR	NO V–DANCING	

1.Playback the NTSC recorded tape and place the unit in STILL mode.
2.Adjust VR2009 so that the V–Dancing does not appear on the monitor screen.

2–3– 6. SLOW TRACKING ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2002 TP2020	VR2011 (SP)	SLOW	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO–SCOPE	20+–2 (msec) (SP)	

1. Connect the Oscilloscope to TP2002 and TP2020.
2. Set the Slow Tracking VR to Fix position.
3. Record the Colour Bar in SP Mode and playback the just recorded portion. Then place the Unit in 1/5 Speed Slow by Infra–red remote controller. (Press SLOW button and then press + button 5 times)
4. Adjust VR2011 so that the phase difference becomes 20+–2 (msec) as shown in Fig. E4.

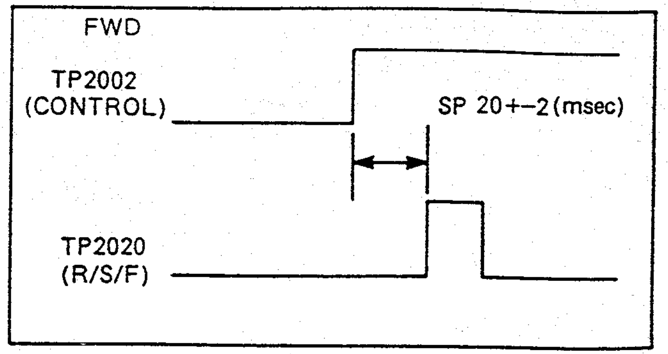


Fig. E4

LUMINANCE, CHROMINANCE & HEAD AMP Section

2–3–7. Y–NR BALANCE ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC302–21	VR302	RECORDING (LP MODE)	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO–SCOPE	WAVE–FORM IS MINIMIZED	

1. Record the Colour Bar in LP Mode.
2. Connect the Oscilloscope to IC302–21.
3. Adjust VR302 so that waveform becomes minimum.

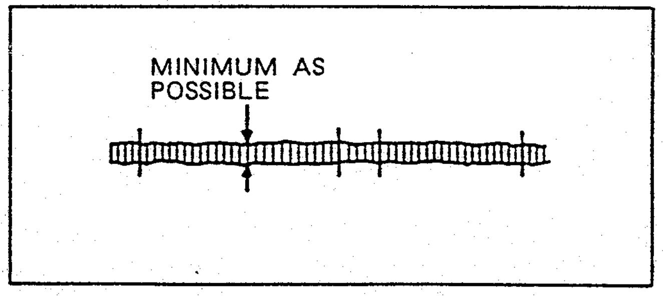


Fig. E5

2–3–8. Y–NR GAIN ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO LINE OUT	VR301	SELF RECORDING AND PLAYBACK (LP MODE)	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO–SCOPE	1.0+–0.05 (Vp–p) (75ohm Terminated)	

1. Disconnect the connector P9501 (Sub Digital C.B.A.) and connect a jumper wire between Q3004(E) and C3002(–).
2. Record the Colour bar in LP Mode.
3. Connect the oscilloscope to VIDEO LINE OUT.
4. Adjust VR301 so that the Video E–E level becomes 1.0+–0.05 (Vp–p).
5. Playback the just recorded portion.
6. Confirm the Video Playback level which is 1.0+–0.05(Vp–p).
7. If the Video Playback level is out of spec., adjust VR301 so that it becomes 1.0+–0.1(Vp–p) and confirm the Video E–E level.

Achieve this adjustment, Video OUT terminal must be terminated with 75onm.

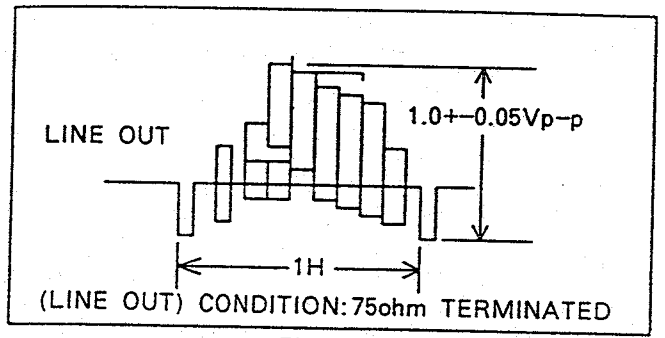


Fig. E6

2–3–9. RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP507(HOT) TP508(GND)	VR501 (Y) VR502 (C)	RECORDING (SP MODE)	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO–SCOPE	32+–2 (mVp–p) (C) 130+–5 (mVp–p) (Y)	

1. Record the Colour Bar in SP Mode.
2. Connect a jumper wire between P3001–12 and GND.
3. Connect the oscilloscope to TP507 (HOT) and TP508 (GND).
4. Turn VR501 so that luminance recording current signal becomes closed. (means minimum waveform)
5. Adjust VR502 so that the Chrominance recording current becomes 32+–2 (mVp–p) as shown in Fig. E7.
6. Next, adjust VR501 so that Luminance Recording current becomes 130+–5 (mVp–p) as shown in Fig. E8.

NOTE: Do not connect the GND between oscilloscope and VTR. (For example, connect the oscilloscope for trigger to the Video out terminal.)

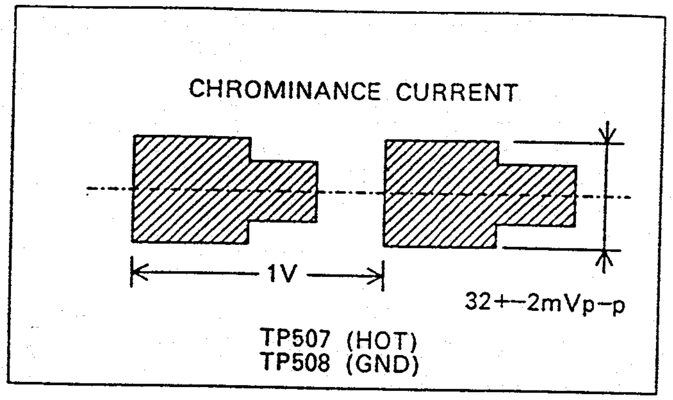


Fig. E7

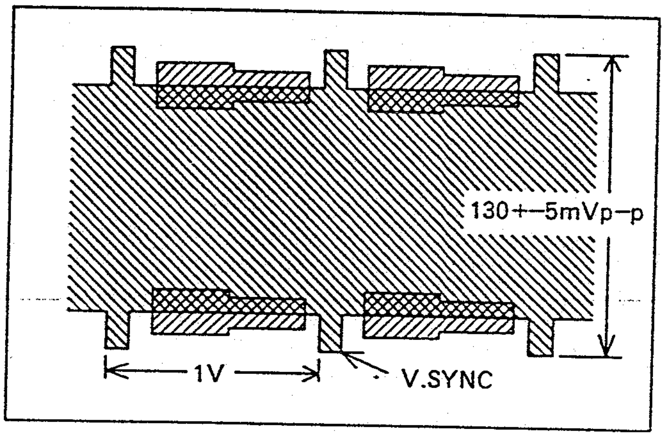


Fig. E8

2–3–10. CHROMA RECURSIVE ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC302–8	VR801 VR802	SELF RECORDING AND PLAYPACK	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO–SCOPE	AMPLITUDE IS MINIMIZED	

1. Record the Colour Bar in SP Mode and playback the just recorded portion.
2. Connect the Oscilloscope to IC302–8.
3. Adjust VR801 and VR802 alternately so that the Chrominance Waveform Amplitude becomes minimum.

Befor this adjustment "Y–NR BALANCE ADJUSTMENT" and "RECORDING CURRENT ADJUSTMENT"

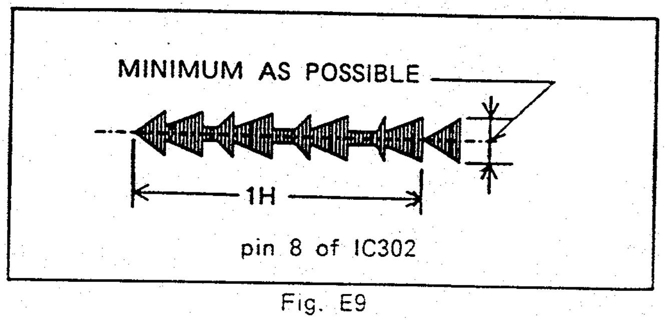


Fig. E9

2-3-11. CHROMINANCE PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO LINE OUT	VR803	SELF RECORDING AND PLAYBACK	COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	0.55+-0.05 (Vp-p) (75ohm terminated)	

1. Record the Colour Bar in SP Mode and playback the just recorded portion.
2. Connect the Oscilloscope to VIDEO LINE OUT.
3. Adjust VR803 so that the CYAN Level becomes 0.55+-0.05 (Vp-p) as shown in Fig. E10.

Achieve this adjustment, the unit must be terminated with 75ohm.

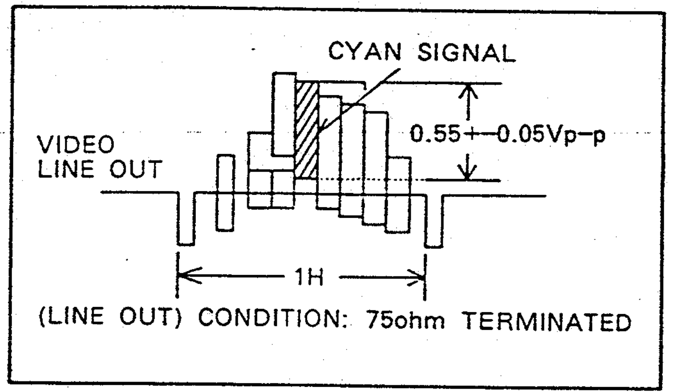


Fig. E10

2-3-12. SECAM KILLER ADJUSTMENT (NV-L28EG)

TP	ADJ.	MODE	INPUT
IC851-11	T851	RECORDING	SECAM COLOUR BAR
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	PORTION "A" IS PEAK TO NEGATIVE DIRECTION	

1. Record the SECAM Colour Bar.
2. Connect the Oscilloscope to IC851-11.
3. Adjust T851 so that portion "A" is peak to negative direction as shown in Fig. E11.

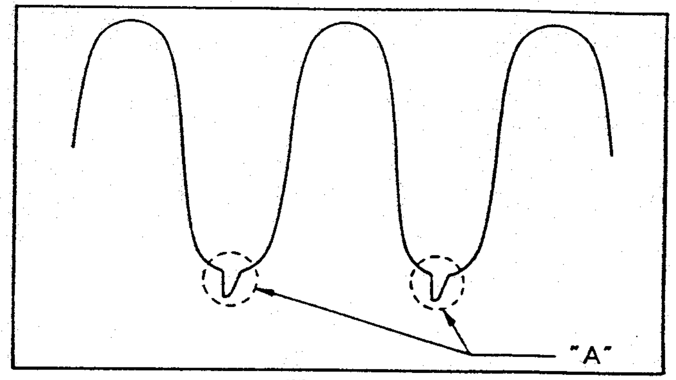


Fig. E11

2-3-13. VIDEO FREQUENCY RESPONSE ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIDEO LINE OUT	VR3012 (SP) VR3013 (LP)	SELF RECORDING AND PLAYBACK	VIDEO SWEEP SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE/ VIDEO SWEEP GENERATOR	B/A=0+-1 (dB) (90~110(%))	

1. Set the Video Sweep Generator output as shown in Fig. E12.

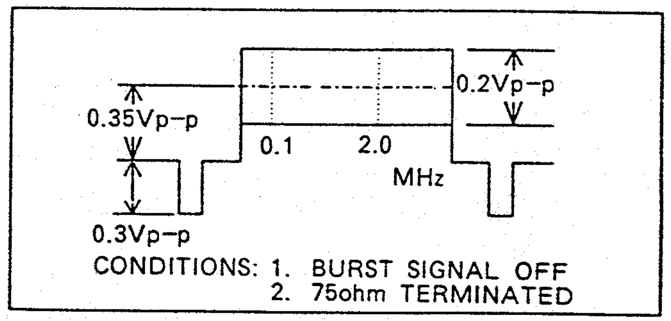


Fig. E12

2. Record the Video Sweep Signal in SP Mode and playback just recorded portion.
3. Set the Tracking control to Fix position.
4. Set the EDIT SW to OFF position.
5. Adjust VR3012 so that the Frequency Response becomes B/A=0+-1dB as shown in Fig. E13.
6. Record the Video Sweep Signal in LP Mode and playback just recorded portion.
7. Set the Tracking control to Fix position.
8. Adjust VR3013 so that the Frequency Response becomes B/A=0+-1dB as shown in Fig. E13.

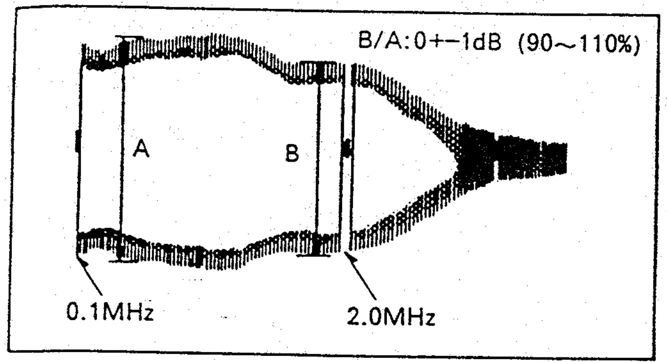


Fig. E13

2-3-14. ARTIFICIAL NTSC AFC FREE RUN ADJUSTMENT

TP	ADJ.	MODE	INPUT
IC3801-9	VR3801	STOP	SINE WAVE (1KHz,-10dB (0.9V))
TAPE	**M. EQ.**	**SPEC.**	
	FREQUENCY COUNTER	15735+-100HZ	

1. Set the signal generator to 1KHz,-10GdB(0.9V) and supply to the Video Input Terminal.
2. Supply the 5V to IC3801-15.
3. Connect the frequency counter to IC3801-9.
4. Adjust VR3801 so that the reading of the frequency counter is 15735+-100Hz.

AUDIO Section

2-3-15. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4002 (+) TP4003 (-)	VR4002	RECORDING	
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	V.T.V.M.	2.7+-0.1 (mVrms)	

1. Connect the V.T.V.M. to TP4002 (+) and TP4003 (-). (Do not use long cable for Connection)
2. Make a short circuit at terminal of the Audio input.
3. Place the Unit in Recording Mode.
4. Adjust VR4002 so that reading of V.T.V.M. becomes 2.7+-0.1 (mVrms).

TIMER Section

2-3-16. TIMER REFERENCE CLOCK ADJUSTMENT

(NV-L28EG)

TP	ADJ.	MODE	INPUT
TP7501	C7501	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUENCY COUNTER DC POWER SUPPLY	7812.5+-0.015(us)	

1. Set the voltage of DC power supply for DC5.0+-0.1(V) and supply it to P7501-11,10(+) and GND (-).
2. Connect the jumper wire between P7508-8 and GND.
3. Connect the Frequency Counter to TP7501.
4. Adjust C7501 so that TP7501 becomes 7812.5+-0.015(us).

(NV-L28B)

TP	ADJ.	MODE	INPUT
TP7501	C7501	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUENCY COUNTER	488.2812+-0.001(us)	

1. Set the voltage of power supply for 5.0+-0.1V and supply it to P7501-11,10(+) and GND(-).
2. Connect the jumper wire between P7501-8 and GND.
3. Connect the diode(MA165) between IC7501-36 and IC7501-56.
4. Connect the Frequency Counter to TP7501.
5. Adjust C7501 so that TP7501 becomes 488.2812+-0.001(usec).

DIGITAL Section

2-3-17. E-E LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
P9501-(11)	VR9506	STOP	VIDEO SIGNAL (COLOUR BAR)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	2.0 +- 0.1Vp-p	

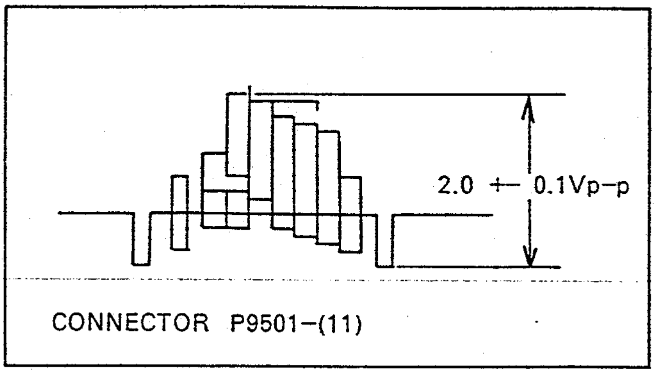

2.0 +- 0.1Vp-p
CONNECTOR P9501-(11)

Fig. E14

2-3-18. SMALL PICTURE APC FREE RUN ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9511	C9501	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUEN-CY COUNTER	4,433,619 +- 100Hz	

1. Connect the short jumper between video-in and GND as shown in Fig. E16.
2. Connect the resistor (10Kohm) between TP9511 and GND as shown in Fig. E15.
3. Connect the frequency counter to TP9511.
4. Adjust C9511 so that the reading of frequency counter is 4,433,619 +- 100Hz.

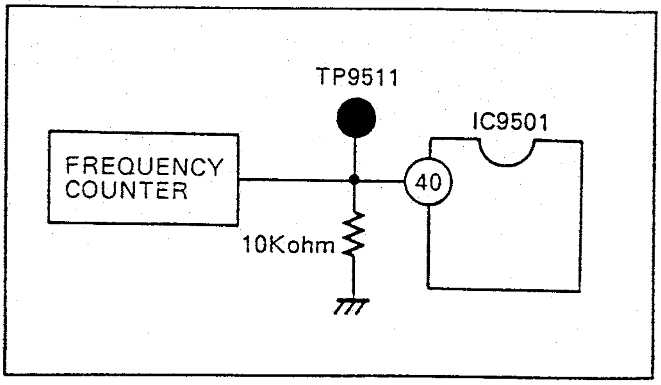

TP9511
IC9501
FREQUENCY COUNTER
40
10Kohm

Fig. E15

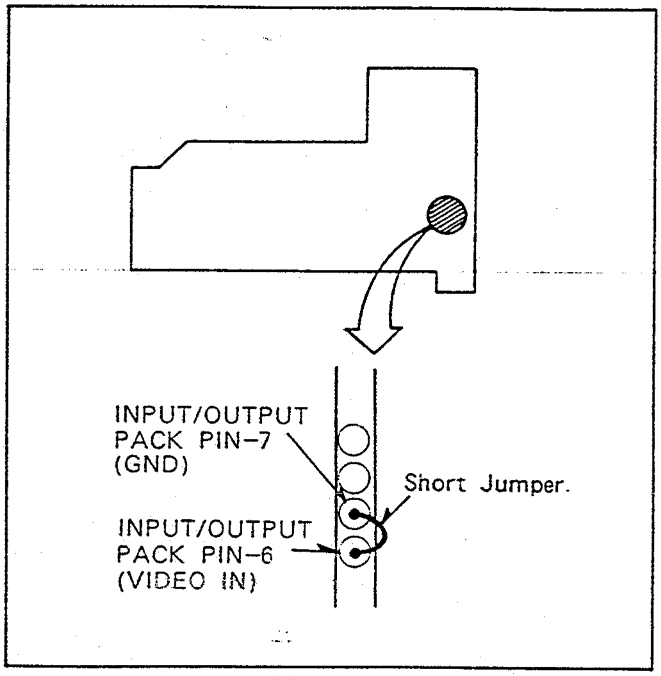

INPUT/OUTPUT PACK PIN-7 (GND)
Short Jumper.
INPUT/OUTPUT PACK PIN-6 (VIDEO IN)

Fig. E16

2-3-19. SMALL PICTURE AFC FREE RUN ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9504	VR9504	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUEN-CY COUNTER	15,625 +- 100Hz	

1. Connect the short jumper between video-in and GND as shown in Fig. E16.
2. Connect the frequency counter to **TP9504.**
3. Adjust VR9504 so that the reading of frequency counter is 15,625 +- 100Hz.

2-3-20. LARGE PICTURE APC FREE RUN ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9506	C9502	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUEN-CY COUNTER	4,433,619 +– 100Hz	

1. Connect the short jumper between video-in and GND as shown in Fig. E16.
2. Connect the frequency counter to TP9506.
3. Adjust C9502 so that the reading of frequency counter is 4,433,619 +– 100Hz.

2-3-21. LARGE PICTURE AFC FREE RUN ADJUSTMENT (1)

TP	ADJ.	MODE	INPUT
QR9501-(C)	VR9510	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUEN-CY COUNTER	15,625 +– 100Hz	

1. Connect the short jumper between video-in and GND as shown in Fig. E16.
2. Connect the frequency counter to QR9501-(C).
3. Adjust VR9510 so that the reading of frequency counter is 15,625 +– 100Hz.

2-3-22. LARGE PICTURE AFC FREE RUN ADJUSTMENT (2)

TP	ADJ.	MODE	INPUT
TP9510	VR9601	STOP	
TAPE	**M. EQ.**	**SPEC.**	
	FREQUEN-CY COUNTER	15,625 +– 100Hz	

1. Connect the short jumper between video-in and GND as shown in Fig. E16.
2. Connect the frequency counter to TP9510.
3. Adjust VR9601 so that the reading of frequency counter is 15,625 +– 100Hz.

2-3-23. SMALL PICTURE COLOUR FLICKER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9503	VR9502 L9509	STOP	VIDEO SIGNAL (COLOUR BAR)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	A LEVEL...MAXIMUM B LEVEL...MINIMUM	

1. Place the unit "Digital 1/4 Screen Frame Store mode" by using remote controller.
2. Connect the oscilloscope to TP9503.
3. Adjust VR9502 so that the "A" level is maximized and then adjust L9509 and L9510 alternately so that the "B" level is minimized.

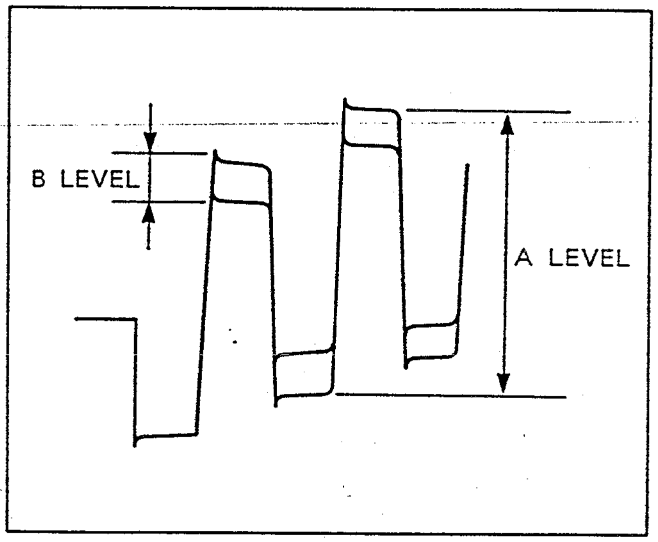


Fig. E17

2-3-24. SMALL PICTURE LUMINANCE LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
P9501-(11)	VR9505	STOP	VIDEO SIGNAL (COLOUR BAR)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	Refer to Fig. E18	

1. Place the unit in "Digital 1/4-Screen Frame Store mode" by using remote controller.
2. Connect the oscilloscope to connector P9501-(11).
3. Adjust VR9505 so that the difference between white levels of small picture and large picture is minimum as shown in Fig. E18.

Note:
In this time, white level of large picture within 2.0 +- 0.1Vp-p.
If white level of large picture is out of spec, adjust VR9506 so that it is 2.0 +- 0.1Vp-p.

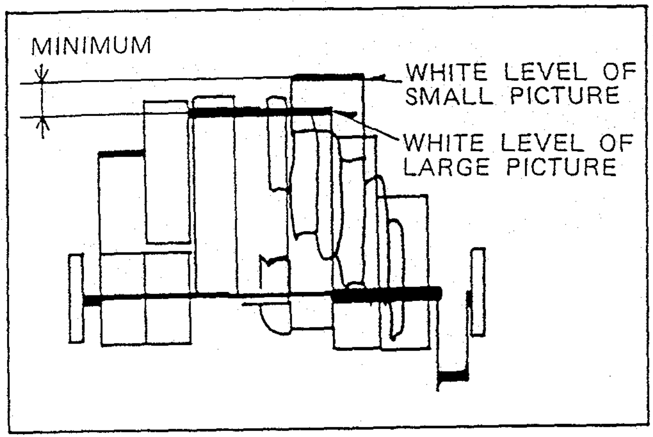

MINIMUM
WHITE LEVEL OF SMALL PICTURE
WHITE LEVEL OF LARGE PICTURE

Fig. E18

2-3-25. SMALL PICTURE CHROMINANCE LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9501	VR9501	STOP	VIDEO SIGNAL (COLOUR BAR)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	A LEVEL ... 1.8 +- 0.05Vp-p	

1. Place the unit in "Digital 1/4-Screen Frame Store mode" by using remote controller.
2. Connect the oscilloscope to TP9501.
3. Adjust VR9501 so that "A" LEVEL becomes 1.8 +- 0.05(Vp-p).

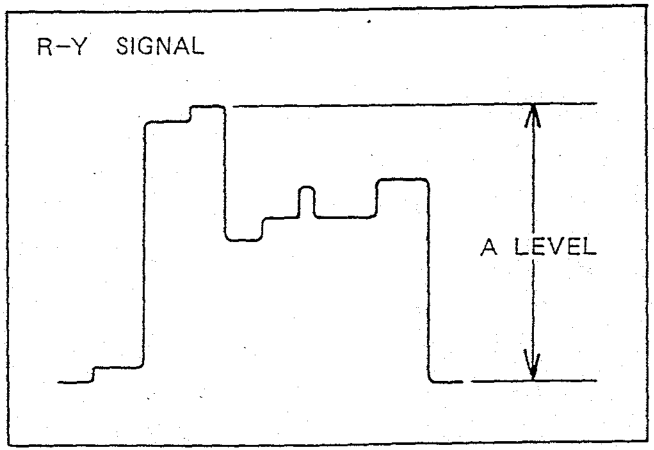

R-Y SIGNAL
A LEVEL

Fig. E19

2-3-26. SMALL PICTURE CARRIER BALANCE ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9508	VR9508 VR9509	STOP	VIDEO SIGNAL (COLOUR BAR)
TAPE	**M. EQ.**	**SPEC.**	
	OSCILLO-SCOPE	A LEVEL...MINIMUM	

1. Supply the PAL MONOSCOPE signal throught filter which consists of capacitor (470u) and resistor (75ohm) to connector P9501-15 as shown in Fig. E20.
2. Place the unit in "Digital Picture in Picture (PinP) mode" by using remote controller.
3. Adjust VR9508 and VR9509 alternately so that the "A" level is minimized as shown in Fig. E21.

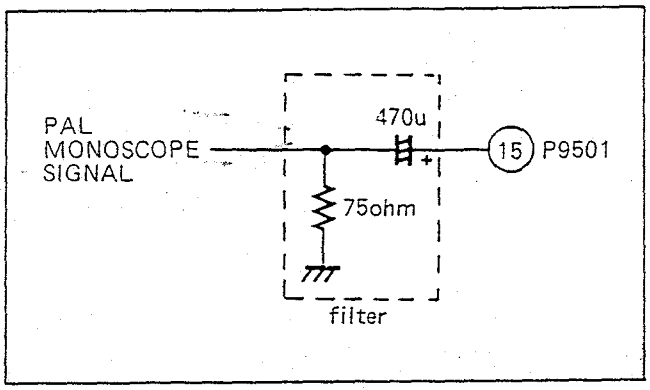

PAL MONOSCOPE SIGNAL
470u
+
15
P9501
75ohm
filter

Fig. E20.

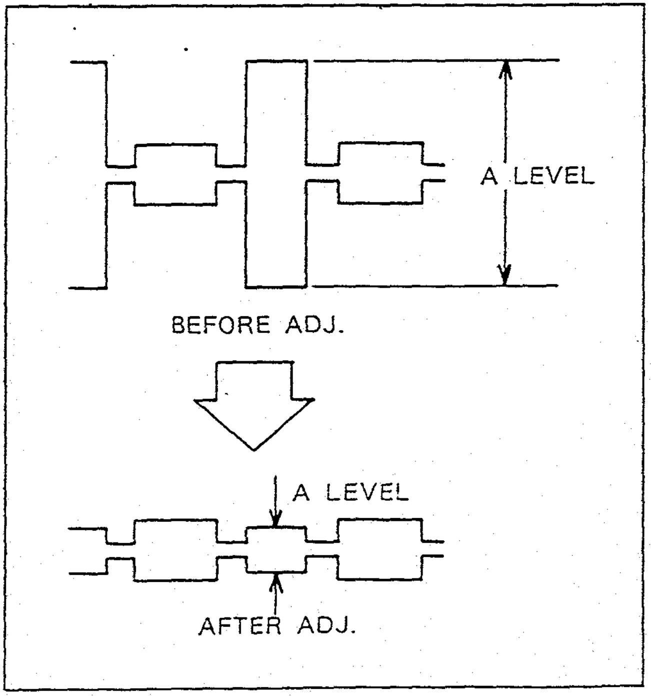
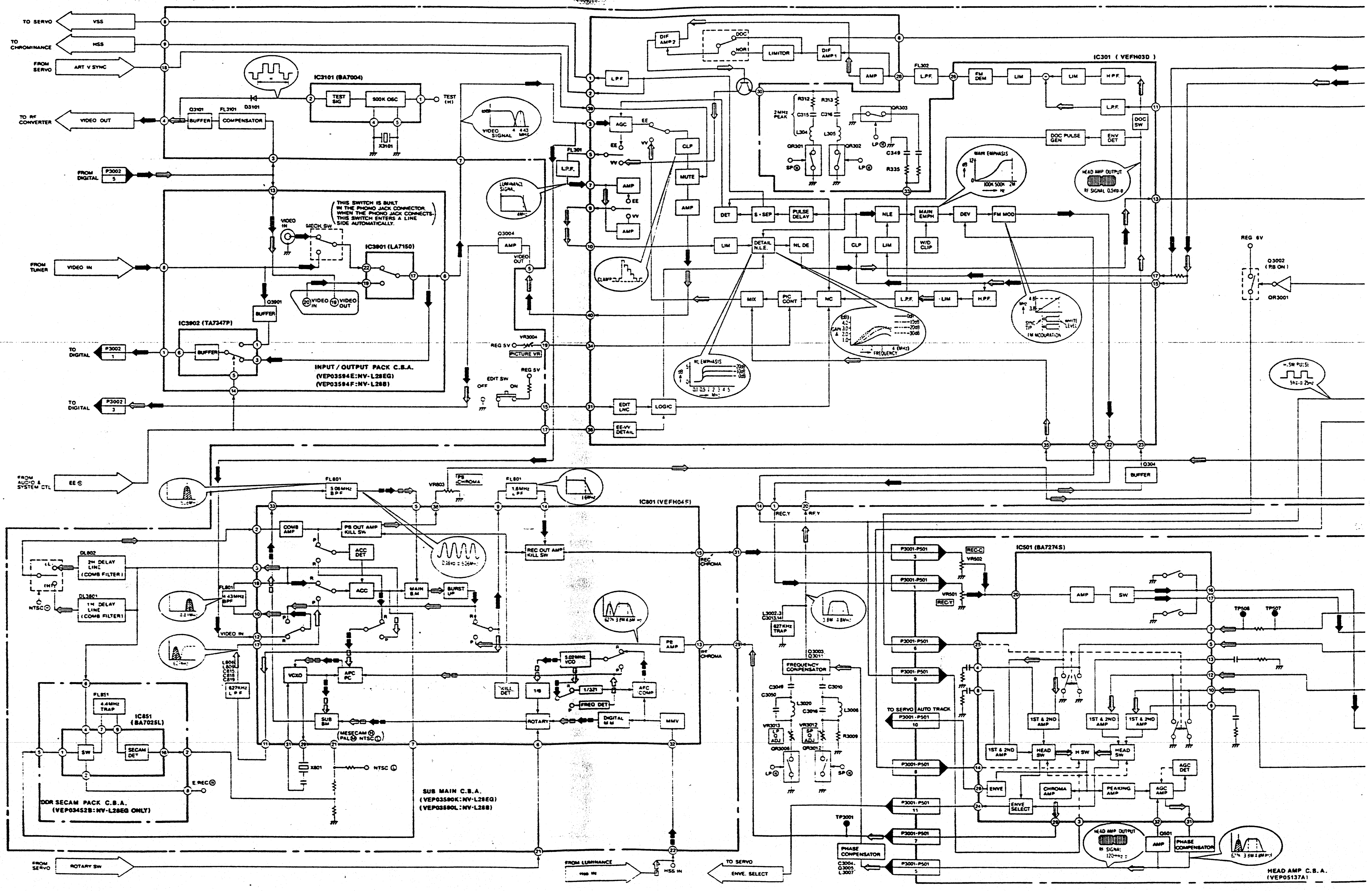

A LEVEL
BEFORE ADJ.
A LEVEL
AFTER ADJ.

Fig. E21.

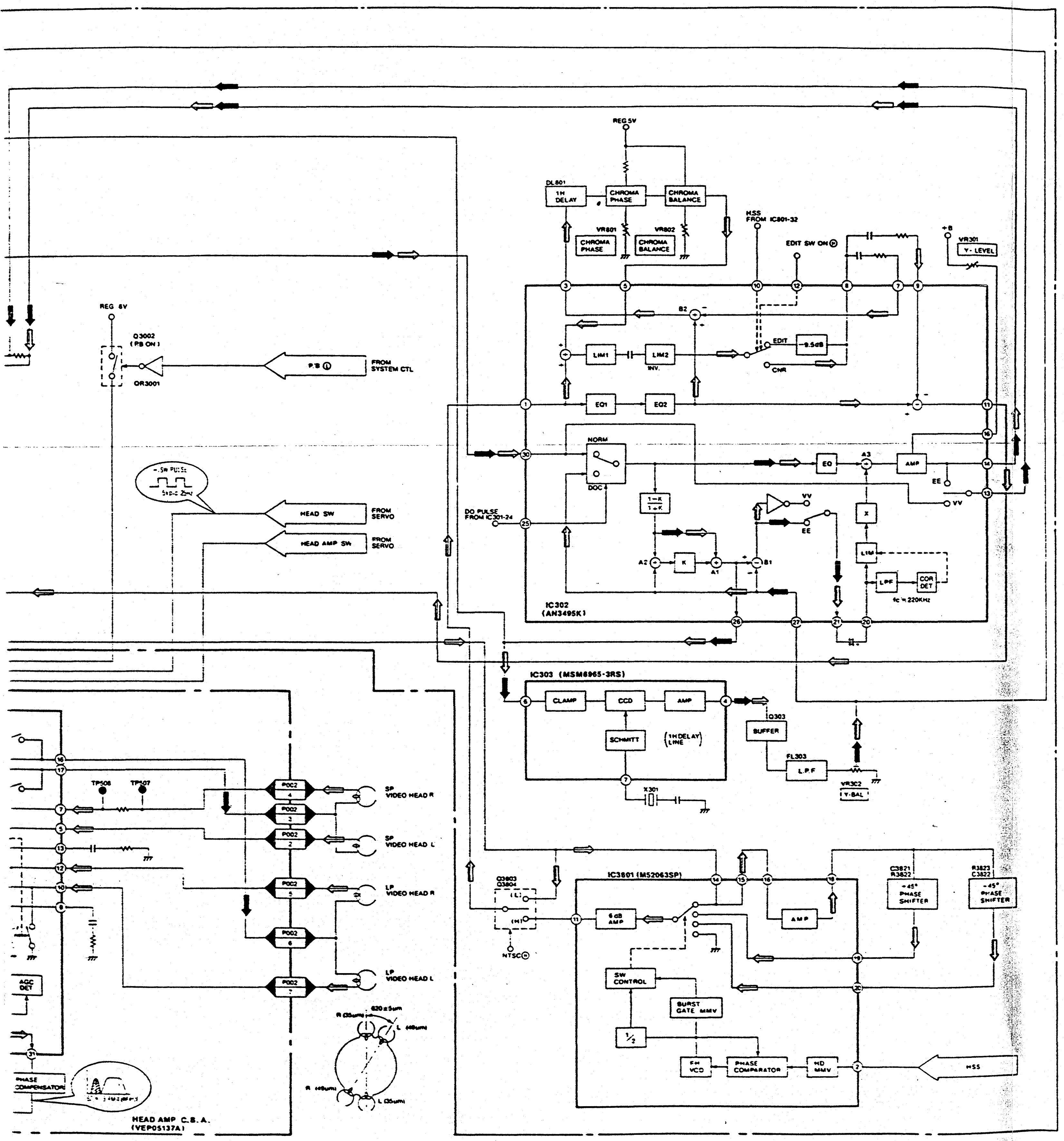
SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS
3-1. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

⬅ MAIN SIGNAL PATH IN REC MODE
⇦ MAIN SIGNAL PATH IN PLAYBACK MODE

⬅■ 5.06MHz PHASE ROTATIO
⇦□ 5.06MHz PHASE ROTATIO

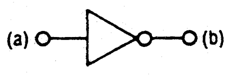

TO SERVO
VSS
TO CHROMINANCE
HSS
FROM SERVO
ART V SYNC
TO RF CONVERTER
VIDEO OUT
Q3101
BUFFER
FL3101
COMPENSATOR
D3101
IC3101 (BA7004)
TEST SIG
500K OSC
TEST (H)
X3101
VIDEO SIGNAL
4 4.43 MHz
FROM DIGITAL
P3002
5
THIS SWITCH IS BUILT IN THE PHONO JACK CONNECTOR. WHEN THE PHONO JACK CONNECTS, THIS SWITCH ENTERS A LINE SIDE AUTOMATICALLY.
VIDEO IN
MECK SW
IC3901 (LA7150)
FROM TUNER
VIDEO IN
VIDEO IN
VIDEO OUT
Q3901
BUFFER
IC3902 (TA7347P)
BUFFER
TO DIGITAL
P3002
1
INPUT / OUTPUT PACK C.B.A.
(VEP03594E:NV-L28EG)
(VEP03594F:NV-L28B)
TO DIGITAL
P3002
3
Q3004
AMP
VIDEO OUT
VR3004
REG 5V
PICTURE VR
EDIT SW
OFF
ON
REG 5V
FL301
L.P.F.
LUMINANCE SIGNAL
L.P.F
AGC
EE
EE
VV
VV
CLP
AMP
EE
AMP
VV
MUTE
AMP
CLAMP
DIF AMP 2
DOC
NOR
LIMITOR
DIF AMP 1
AMP
FL302
L.P.F.
FM DEM
LIM
LIM
H.P.F.
IC301 (VEFH03D)
L.P.F.
DOC SW
DOC PULSE GEN
ENV DET
R312
R313
2MHz PEAK
C315
C316
L304
L305
QR301
QR302
SP (H)
LP (H)
QR303
LP (H)
C349
R335
MAIN EMPHASIS
dB
12
0
100K 500K 2M
Hz
HEAD AMP OUTPUT
RF SIGNAL 0.5Vp-p
DET
S・SEP
PULSE DELAY
NLE
MAIN EMPH
DEV
FM MOD
W/D CLIP
CLP
LIM
LIM
DETAIL N.L.E.
NL DE
MIX
PIC CONT
NC
L.P.F.
LIM
H.P.F.
(dB)
GAIN
4.0
3.0
2.0
1.0
0dB
-10dB
-20dB
-30dB
1 2 3 4 (MHz)
FREQUENCY
NL EMPHASIS
dB
-20dB
-10dB
-0dB
0.1 0.5 1 2 3 4 5
MHz
4.8
3.8
MHz
SYNC TIP
WHITE LEVEL
FM MODURATION
EDIT LNC
LOGIC
EE-VV DETAIL
REG 6V
Q3002 (PB ON)
QR3001
H.SW PULSE
5Vp-p 25Hz
Q304
BUFFER
FROM AUDIO & SYSTEM CTL
EE ⓔ
FL801
5.06MHz BPF
VR803
PB CHROMA
FL801
1.6MHz LPF
1.6MHz
IC801 (VEFH04F)
COMB AMP
PB OUT AMP KILL SW
ACC DET
REC OUT AMP KILL SW
REC CHROMA
DL802
2H DELAY LINE (COMB FILTER)
DL3801
1H DELAY LINE (COMB FILTER)
NTSC ⓝ
FL801
4.43MHz BPF
ACC
MAIN BM
BURST UP
VIDEO IN
627KHz 3.8M 4.8M
PB AMP
RF CHROMA
L806
L809
C815
C818
C819
627KHz LPF
VCXO
APC PC
5.02MHz VCO
KILL DET
1/8
1/321
AFC COMP
FREQ DET
SUB BM
ROTARY
DIGITAL MM
MMV
(MESECAM Ⓜ PAL Ⓟ NTSC Ⓝ)
X801
NTSC Ⓛ
FL851
4.4MHz TRAP
IC851 (BA7025L)
SW
SECAM DET
E.REC Ⓗ
DDR SECAM PACK C.B.A.
(VEP03452B:NV-L28EG ONLY)
SUB MAIN C.B.A.
(VEP03590K:NV-L28EG)
(VEP03590L:NV-L28B)
FROM SERVO
ROTARY SW
FROM LUMINANCE
HSS IN
HSS IN
TO SERVO
ENVE. SELECT
REC.Y
RF.Y
L3002.3
C3013.14
627KHz TRAP
3.8M 4.8MHz
Q3003, Q3011
FREQUENCY CONPENSATOR
C3049
C3010
C3050
L3020
C3016
L3006
VR3013
LP Q ADJ
VR3012
SP Q ADJ
R3009
QR3006
QR3012
LP Ⓗ
SP Ⓗ
TP3001
PHASE CONPENSATOR
C3004, Q3005, L3007
TO SERVO
ENVE. SELECT
P3001-P501
REC-C
VR502
VR501
REC-Y
TO SERVO AUTO TRACK
IC501 (BA7274S)
AMP
SW
TP506
TP507
1ST & 2ND AMP
1ST & 2ND AMP
1ST & 2ND AMP
1ST & 2ND AMP
HEAD SW
H SW
HEAD SW
AGC DET
ENVE
CHROMA AMP
PEAKING AMP
AGC AMP
ENVE SELECT
HEAD AMP OUTPUT
RF SIGNAL 120mVp-p
Q501
AMP
PHASE COMPENSATOR
627K 3.8M 4.8MHz
HEAD AMP C.B.A.
(VEP05137A)

.06MHz PHASE ROTATIONAL SIGNAL IN REC MODE
.06MHz PHASE ROTATIONAL SIGNAL IN PLAYBACK MODE


REG 5V
DL801 1H DELAY
CHROMA PHASE
CHROMA BALANCE
VR801 CHROMA PHASE
VR802 CHROMA BALANCE
HSS FROM IC801-32
EDIT SW ON
+B
VR301 Y-LEVEL
B2
LIM1
LIM2 INV.
EDIT
-9.5dB
CNR
EQ1
EQ2
NORM
DOC
EQ
A3
AMP
EE
VV
DO PULSE FROM IC301-24
1-K
K
A2
A1
B1
X
LIM
LPF
COR DET
fc ≒ 220KHz
IC302 (AN3495K)
REG 5V
Q3002 (PB ON)
QR3001
P.B
FROM SYSTEM CTL
SW PULSE
HEAD SW
FROM SERVO
HEAD AMP SW
FROM SERVO
IC303 (MSM6965-3RS)
CLAMP
CCD
AMP
SCHMITT
(1H DELAY LINE)
X301
Q303 BUFFER
FL303 L.P.F
VR3C2 Y-BAL
TP506
TP507
P002
SP VIDEO HEAD R
SP VIDEO HEAD L
LP VIDEO HEAD R
LP VIDEO HEAD L
AGC DET
PHASE COMPENSATOR
HEAD AMP C.B.A. (VEP05137A)
620±5um
R (35um)
L (49um)
R (49um)
L (35um)
Q3803 Q3804
(L)
(H)
NTSC
IC3801 (M52063SP)
6dB AMP
AMP
SW CONTROL
BURST GATE MMV
1/2
FH VCO
PHASE COMPARATOR
HD MMV
HSS
C3821 R3822 -45° PHASE SHIFTER
R3823 C3822 -45° PHASE SHIFTER

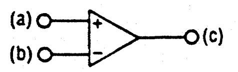
SYMBOL	TRUTH VALUE TABLE

INVERTER



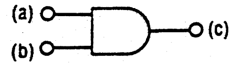
IN	(a)	H	L
OUT	(b)	L	H

COMPARTOR



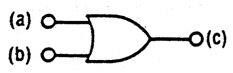
IN	(a)/(b)	(a)>(b)	(a)<(b)
OUT	(c)	H	L

AND CIRCUIT



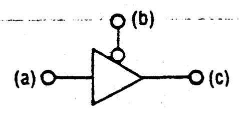
IN	(a)	L	L	H	H
	(b)	L	H	L	H
OUT	(c)	L	L	L	H

OR CIRCUIT



IN	(a)	L	L	H	H
	(b)	L	H	L	H
OUT	(c)	L	H	H	H

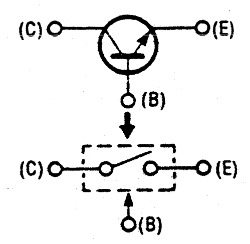
THREE STATES BUFFER



IN	(a)	H	L	H or L
	(b)	L	L	H
OUT	(c)	H	L	※

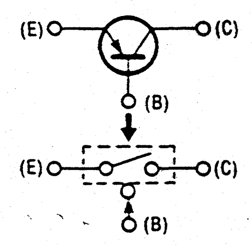
※ High Impedance

TR. SW (NPN TYPE)



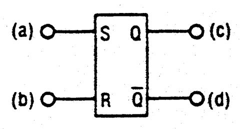
BASE	H	L
TR. SW	ON	OFF

TR. SW (PNP TYPE)



BASE	H	L
TR. SW	OFF	ON

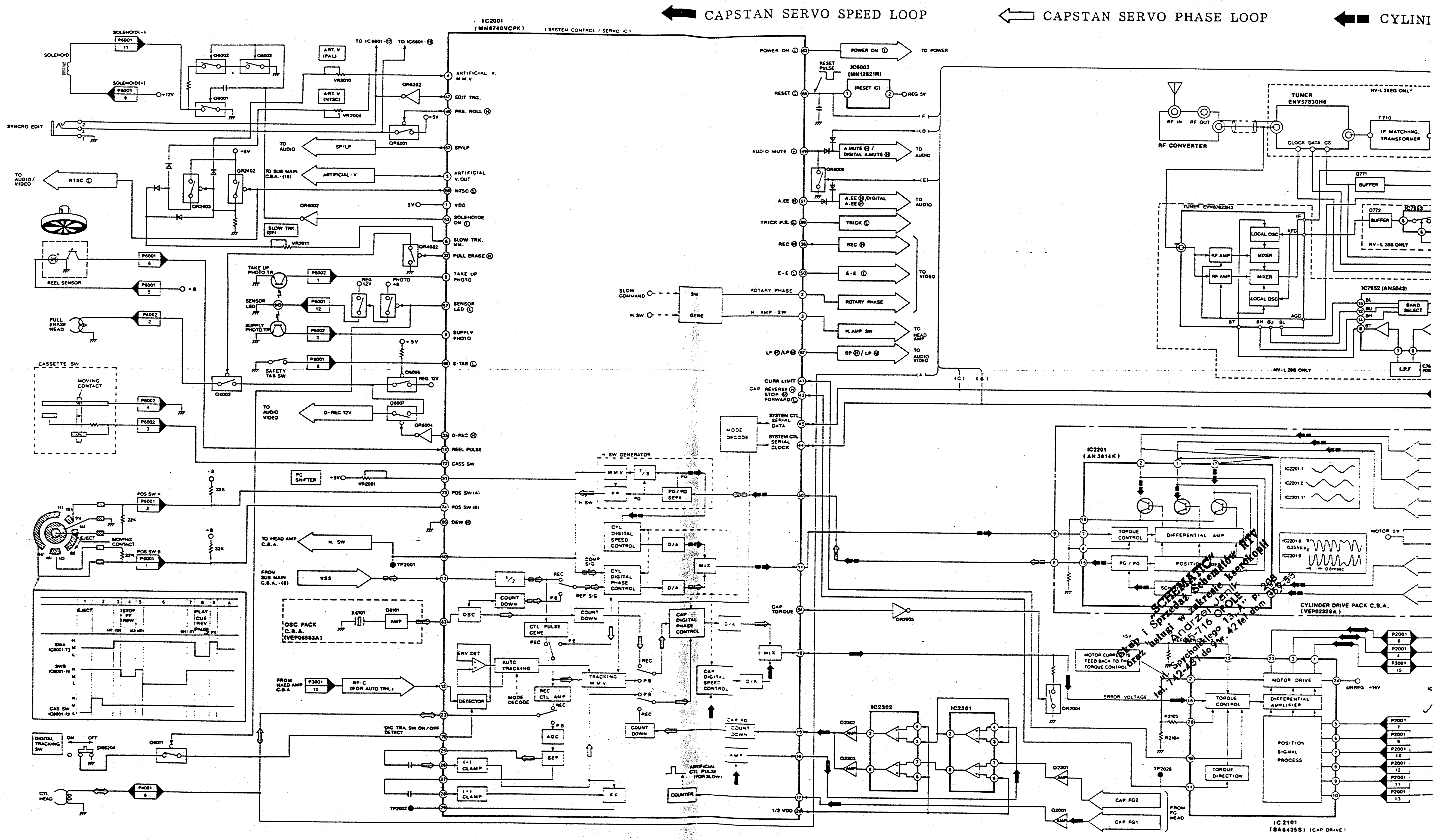
R-S TYPE FLIP-FLOP



IN	(a)	L	L	⎍
	(b)	L	⎍	L
OUT	(c)	※	L	H
	(d)	◆	H	L

※ Initial condition is maintained.
◆ Initial condition is reverced.

3-2. SYSTEM CONTROL & SERVO BLOCK DIAGRAM


CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINI
IC2001
(MN6740VCPK)
(SYSTEM CONTROL / SERVO -C)
SOLENOID
SOLENOID(-)
SOLENOID(+)
SYNCRO EDIT
TO AUDIO/VIDEO
NTSC
REEL SENSOR
FULL ERASE HEAD
CASSETTE SW
MOVING CONTACT
TAKE UP PHOTO TR
SENSOR LED
SUPPLY PHOTO TR
SAFETY TAB SW
TO AUDIO
SP/LP
TO SUB MAIN C.B.A.-(18)
ARTIFICIAL - V
ART. V (PAL)
ART. V (NTSC)
SLOW TRK. (SP)
TO AUDIO VIDEO
D-REC 12V
ARTIFICIAL V. M M V.
EDIT TRG.
PRE. ROLL
ARTIFICIAL V. OUT
NTSC
VDD
SOLENOIDE ON
SLOW TRK. MM.
FULL ERASE
TAKE UP PHOTO
SENSOR LED
SUPPLY PHOTO
S-TAB
D-REC
REEL PULSE
CASS SW
POS SW (A)
POS SW (B)
DEW
PG SHIFTER
TO HEAD AMP C.B.A.
H. SW
TP2001
FROM SUB MAIN C.B.A.-(8)
VSS
OSC PACK C.B.A. (VEP06583A)
FROM HAED AMP C.B.A
RF-C (FOR AUTO TRK.)
DIGITAL TRACKING SW
DIG. TRA. SW ON/OFF DETECT
CTL HEAD
TP2002
EJECT
STOP FF REW
PLAY CUE REV PAUSE
SWA IC6001-73
SWB IC6001-74
CAS SW IC6001-72
POWER ON
TO POWER
RESET PULSE
IC6003 (MN12621R)
(RESET IC)
REG 5V
RESET
AUDIO MUTE
A.MUTE / DIGITAL A.MUTE
A.EE
A.EE / DIGITAL A.EE
TRICK P.B.
TRICK
REC
E-E
TO VIDEO
ROTARY PHASE
H. AMP SW
TO HEAD AMP
SP / LP
TO AUDIO VIDEO
SLOW COMMAND
H.SW
SW GENE
CURR LIMIT
CAP REVERSE / STOP / FORWARD
SYSTEM CTL SERIAL DATA
SYSTEM CTL SERIAL CLOCK
MODE DECODE
H. SW GENERATOR
M M V
F F
PG/FG SEPA
CYL DIGITAL SPEED CONTROL
CYL DIGITAL PHASE CONTROL
COMP SIG
REF SIG
D/A
MIX
OSC
COUNT DOWN
CTL PULSE GENE
ENV DET
AUTO TRACKING
DETECTOR
MODE DECODE
REC CTL AMP
TRACKING M M V
AGC
SEP
(+) CLAMP
(-) CLAMP
CAP DIGITAL PHASE CONTROL
CAP DIGITAL SPEED CONTROL
CAP FG COUNT DOWN
ARTIFICIAL CTL PULSE (FOR SLOW)
COUNTER
CAP. TORQUE
1/2 VDD
IC2302
IC2301
CAP. FG2
CAP FG1
FROM FG HEAD
TP2026
RF IN
RF OUT
RF CONVERTER
TUNER ENV57830H6
NV-L 28EG ONLY
CLOCK DATA CS
IF MATCHING TRANSFORMER
BUFFER
TUNER EVN87823H3
RF AMP
MIXER
LOCAL OSC
IC7852 (AN5043)
BAND SELECT
NV-L 28B ONLY
L.P.F
IC2201 (AN 3814 K)
TORQUE CONTROL
DIFFERENTIAL AMP
PG / FG
POSITION DETECT
MOTOR 5V
0.8msec
0.35Vp-p
CYLINDER DRIVE PACK C.B.A. (VEP02329A)
MOTOR CURRENT FEED BACK TO THE TORQUE CONTROL
ERROR VOLTAGE
UNREG +14V
MOTOR DRIVE
DIFFERENTIAL AMPLIFIER
POSITION SIGNAL PROCESS
TORQUE DIRECTION
IC 2101 (BA6435S) (CAP DRIVE)

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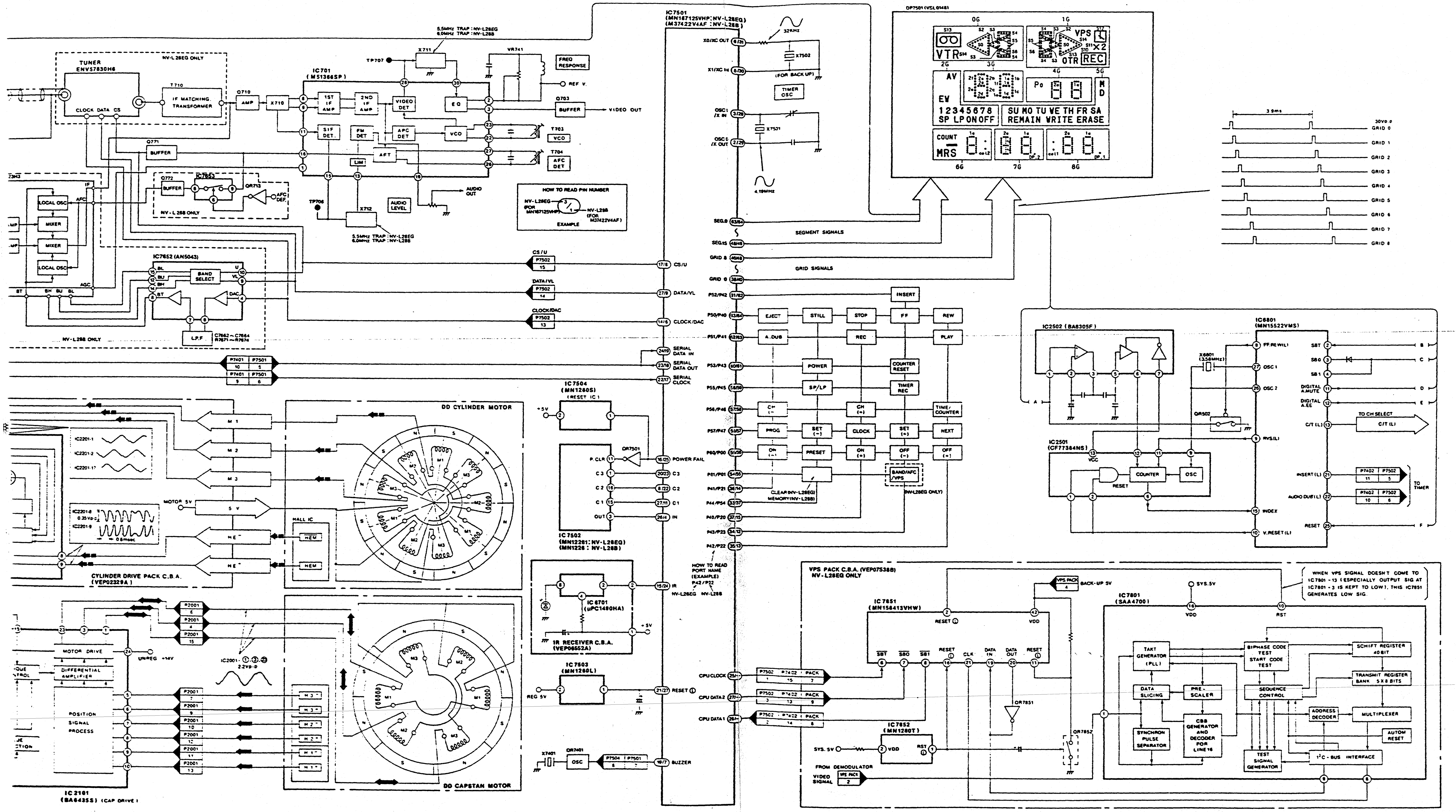
Andrzej Jenik
45-716 OPOLE
ul. Spychalskiego 13/1, p. 208
tel. 742-431 do godz. 14 tel. dom 555-55

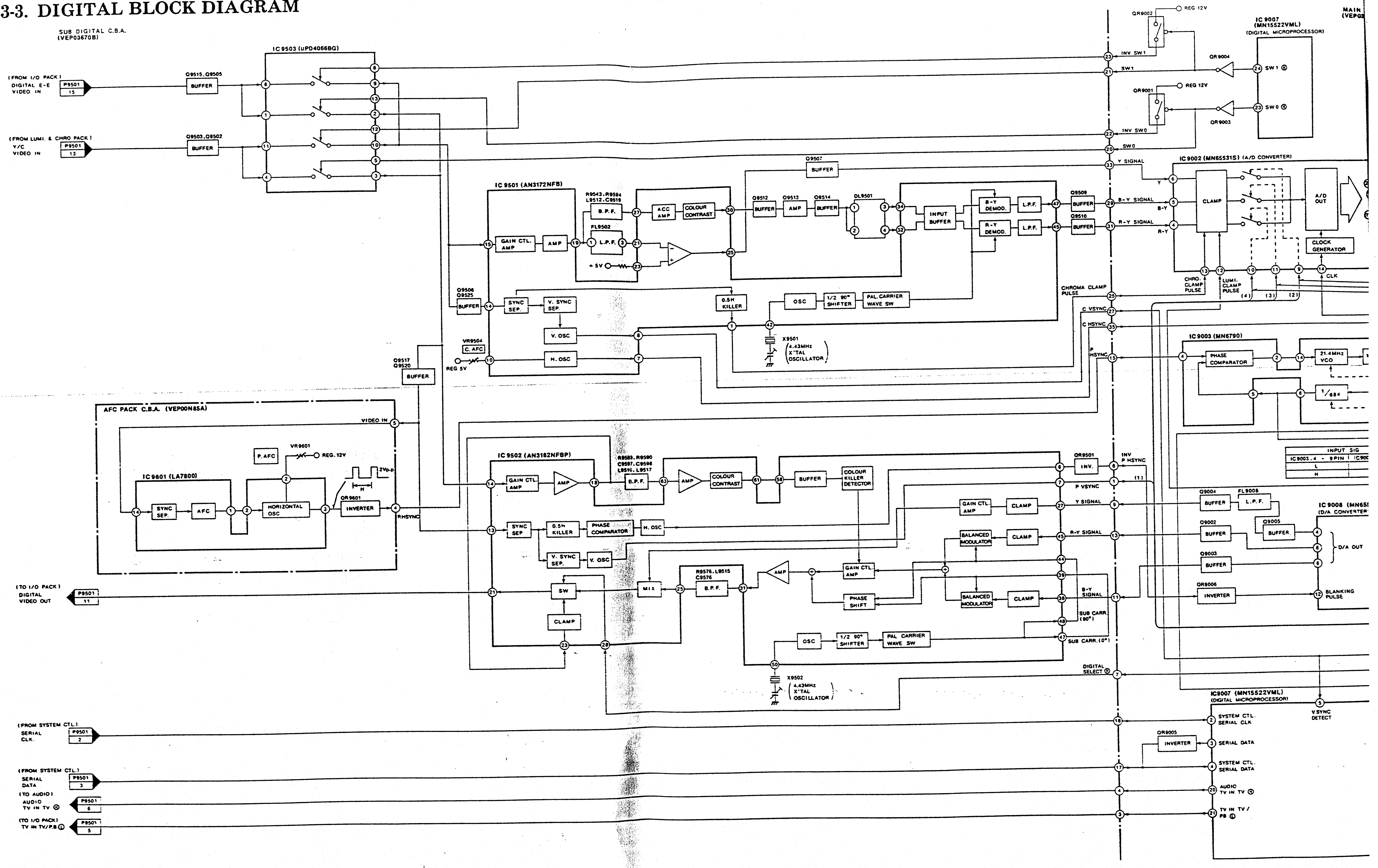
Back Page:
LUMINANCE & CHROMINANCE Section

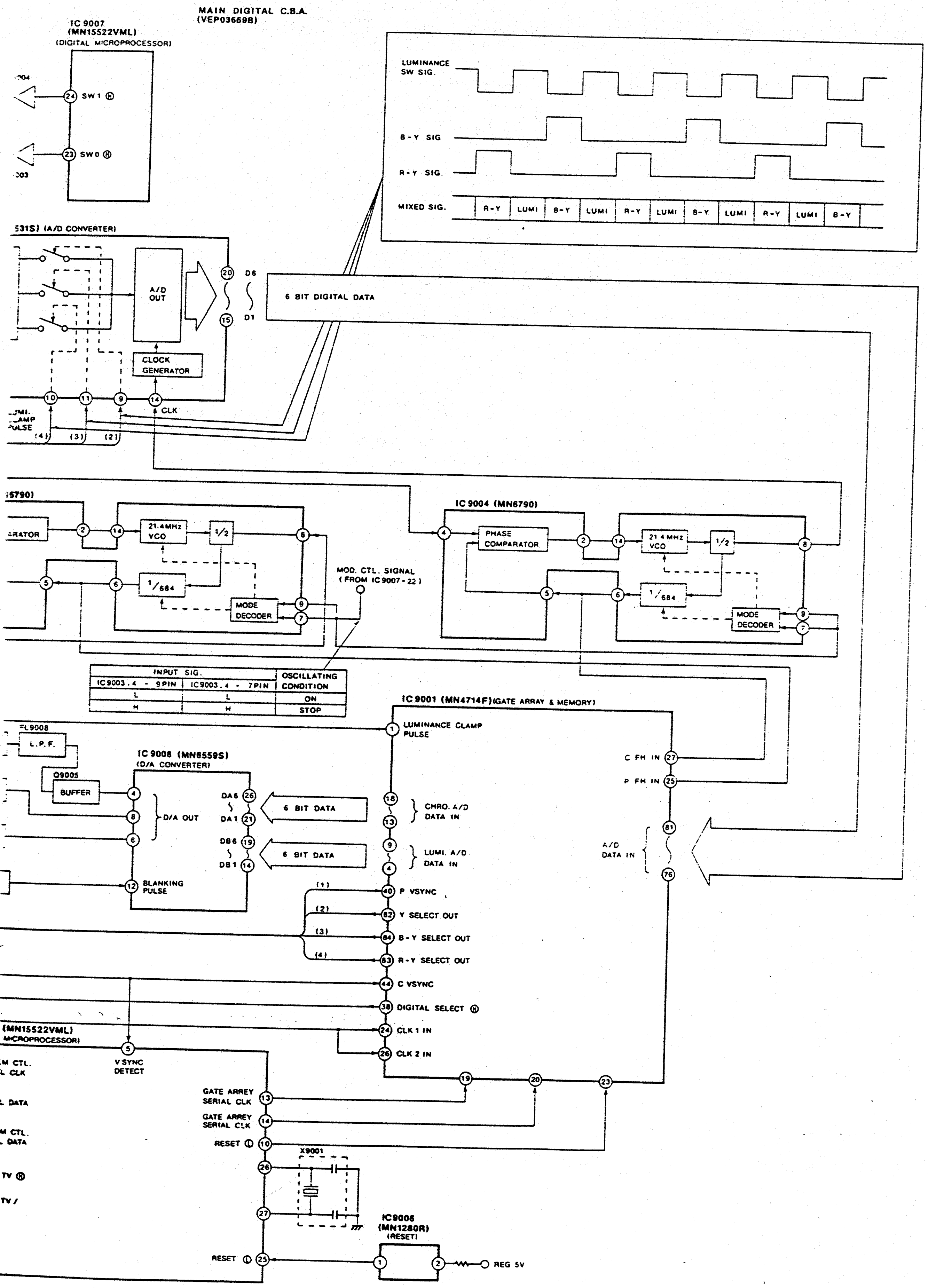
LOOP ◀■ CYLINDER SERVO SPEED LOOP ◁□ CYLINDER SERVO PHASE LOOP



TUNER ENV57830H6
NV-L28EG ONLY
CLOCK DATA CS
T710 IF MATCHING TRANSFORMER
Q710 AMP
X710
IC701 (M51366SP)
1ST IF AMP
2ND IF AMP
VIDEO DET
EQ
SIF DET
FM DET
APC DET
VCO
AFT
LIM
5.5MHz TRAP : NV-L28EG 6.0MHz TRAP : NV-L28B
X711
TP707
VR741
FREQ RESPONSE
REF V.
Q703 BUFFER
VIDEO OUT
T703 VCO
T704 AFC DET
AUDIO LEVEL
AUDIO OUT
TP706
X712
Q771 BUFFER
Q772 BUFFER
IC7653
QR713
AFC DEF.
NV-L28B ONLY
HOW TO READ PIN NUMBER
NV-L28EG (FOR MN167125VHP)
NV-L28B (FOR M37422V4AF)
EXAMPLE
LOCAL OSC
MIXER
AFC
AGC
IC7652 (AN5043)
BAND SELECT
DAC
L.P.F
C7662~C7664 R7671~R7674
BT BH BU BL
CS/U P7502 15
DATA/VL P7502 14
CLOCK/DAC P7502 13
P7401 P7501 10 5
P7401 P7501 9 6
IC7501 (MN167125VHP : NV-L28EG) (M37422V4AF : NV-L28B)
X0/XC OUT
X1/XC IN
32KHz
X7502 (FOR BACK UP)
TIMER OSC
OSC1 /X IN
OSC0 /X OUT
X7501
4.19MHz
SEG.0
SEG.15
SEGMENT SIGNALS
GRID 8
GRID 0
GRID SIGNALS
CS/U
DATA/VL
CLOCK/DAC
SERIAL DATA IN
SERIAL DATA OUT
SERIAL CLOCK
POWER FAIL
C3
C2
C1
IN
IR
BUZZER
RESET
CPU CLOCK
CPU DATA2
CPU DATA1
INSERT
EJECT STILL STOP FF REW
A.DUB REC PLAY
POWER COUNTER RESET
SP/LP TIMER REC
CH (−) CH (+) TIME/COUNTER
PROG SET (−) CLOCK SET (+) NEXT
ON (−) PRESET ON (+) OFF (−) OFF (+)
BAND/AFC /VPS
CLEAR(NV-L28EG) MEMORY(NV-L28B)
NV-L28EG ONLY
HOW TO READ PORT NAME (EXAMPLE) P42/P22 NV-L28EG NV-L28B
IC7504 (MN1280S) (RESET IC)
+5V
QR7501
P.CLR
IC7502 (MN1226 : NV-L28EG) (MN1226 : NV-L28B)
IC6701 (uPC1490HA)
IR RECEIVER C.B.A. (VEP06552A)
IC7503 (MN1280L)
REG 5V
X7401 OSC
P7504 P7501
DP7501 (VSL0148)
VTR VPS OTR REC AV EW
12345678 SP LP ON OFF
SU MO TU WE TH FR SA
REMAIN WRITE ERASE
COUNT MRS
0G 1G 2G 3G 4G 5G 6G 7G 8G
3.9ms
30Vp-p GRID 0
GRID 1
GRID 2
GRID 3
GRID 4
GRID 5
GRID 6
GRID 7
GRID 8
IC2502 (BA6305F)
X6801 (3.58MHz)
IC6801 (MN15522VMS)
FF.REW(L)
OSC1
OSC2
QR502
RVS(L)
INDEX
V.RESET(L)
SBT SB0 SB1
DIGITAL A.MUTE
DIGITAL A.EE
C/T (L)
TO CH SELECT C/T (L)
INSERT (L)
AUDIO DUB(L)
RESET
TO TIMER
IC2501 (CF77384NS)
COUNTER
OSC
DD CYLINDER MOTOR
M1 M2 M3
5V
MOTOR 5V
HALL IC
HEM
IC2201-1 IC2201-2 IC2201-17
IC2201-8 0.35Vp-p IC2201-9 0.8msec
CYLINDER DRIVE PACK C.B.A. (VEP02329A)
P2001
MOTOR DRIVE
UNREG +14V
DIFFERENTIAL AMPLIFIER
POSITION SIGNAL PROCESS
IC2001 2.2Vp-p
H3 H2 H1
DD CAPSTAN MOTOR
IC2101 (BA6435S) (CAP DRIVE)
VPS PACK C.B.A. (VEP07538B) NV-L28EG ONLY
VPS PACK BACK-UP 5V
SYS.5V
IC7851 (MN158413VHW)
RESET VDD
SBT SB0 SB1 RESET CLK DATA IN DATA OUT RESET
P7502 P7402 PACK
QR7851
IC7852 (MN1280T)
VDD RST
QR7852
FROM DEMODULATOR VIDEO SIGNAL
IC7801 (SAA4700)
VDD RST
TAKT GENERATOR (PLL)
DATA SLICING
PRE-SCALER
SYNCHRON PULSE SEPARATOR
CBB GENERATOR AND DECODER FOR LINE16
BIPHASE CODE TEST START CODE TEST
SEQUENCE CONTROL
TEST SIGNAL GENERATOR
ADDRESS DECODER
MULTIPLEXER
SCHIFT REGISTER 40BIT
TRANSMIT REGISTER BANK 5X8 BITS
AUTO RESET
I²C-BUS INTERFACE
WHEN VPS SIGNAL DOESN'T COME TO IC7801-13 (ESPECIALLY OUTPUT SIG AT IC7801-3 IS KEPT TO LOW), THIS IC7851 GENERATES LOW SIG.

3-3. DIGITAL BLOCK DIAGRAM

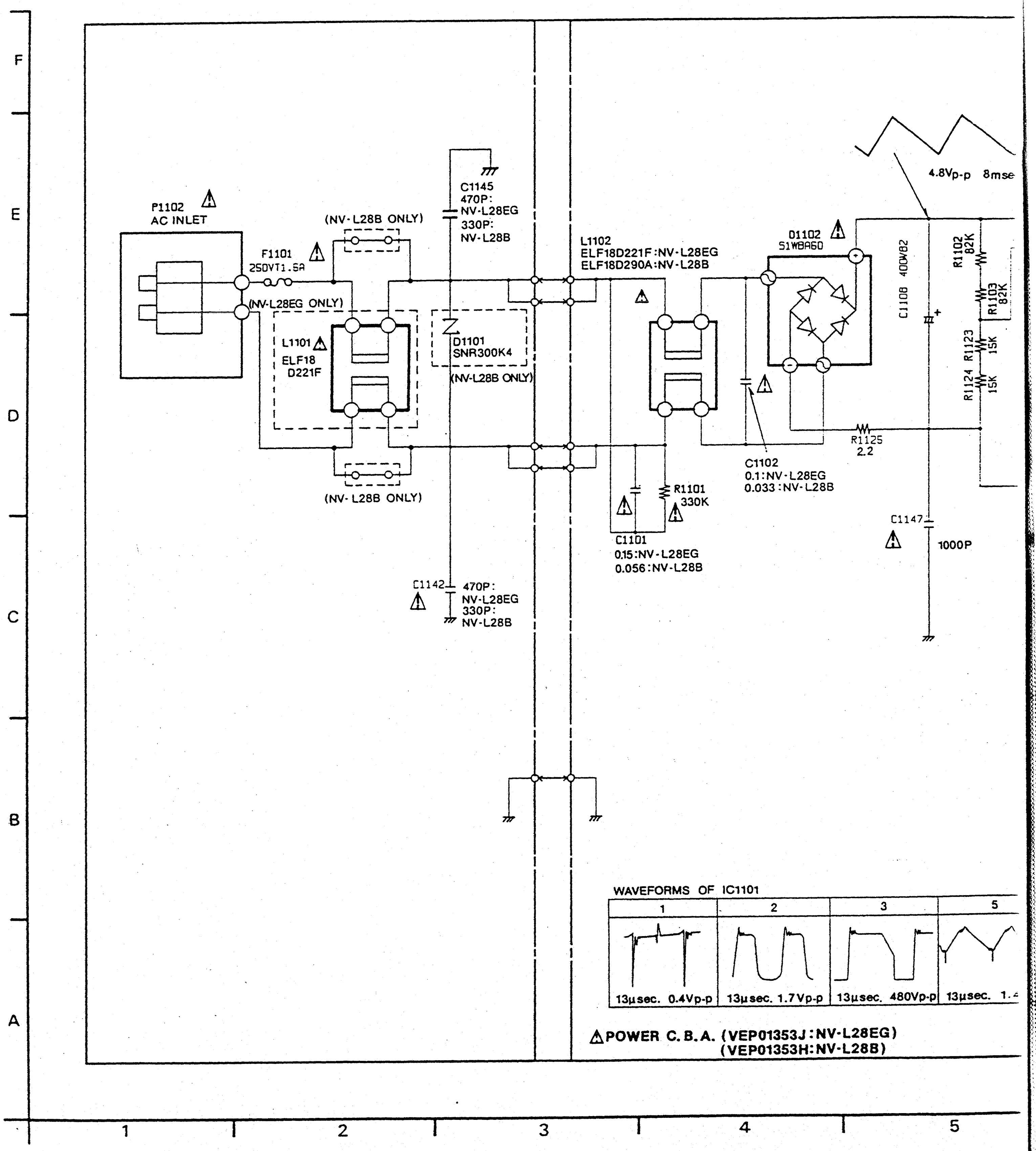

SUB DIGITAL C.B.A.
(VEP03670B)
IC 9503 (uPD4066BG)
(FROM I/O PACK)
DIGITAL E-E
VIDEO IN
P9501
15
Q9515, Q9505
BUFFER
(FROM LUMI. & CHRO PACK)
Y/C
VIDEO IN
P9501
13
Q9503, Q9502
BUFFER
IC 9501 (AN3172NFB)
R9543, R9594
L9512, C9519
B.P.F.
FL9502
L.P.F.
+5V
ACC
AMP
COLOUR
CONTRAST
GAIN CTL.
AMP
AMP
Q9507
BUFFER
Q9512
BUFFER
Q9513
AMP
Q9514
BUFFER
DL9501
INPUT
BUFFER
B-Y
DEMOD.
R-Y
DEMOD.
L.P.F.
L.P.F.
Q9509
BUFFER
Q9510
BUFFER
Q9506
Q9525
BUFFER
SYNC
SEP.
V. SYNC
SEP.
V. OSC
H. OSC
0.5H
KILLER
OSC
1/2 90°
SHIFTER
PAL CARRIER
WAVE SW
X9501
4.43MHz
X'TAL
OSCILLATOR
VR9504
C. AFC
REG 5V
Q9517
Q9520
BUFFER
AFC PACK C.B.A. (VEP00N85A)
VIDEO IN
P. AFC
VR9601
REG. 12V
2Vp-p
H
IC 9601 (LA7800)
SYNC
SEP.
AFC
HORIZONTAL
OSC
QR9601
INVERTER
P.HSYNC
IC 9502 (AN3182NFBP)
R9583, R9590
C9587, C9598
L9510, L9517
GAIN CTL.
AMP
AMP
B.P.F.
AMP
COLOUR
CONTRAST
BUFFER
COLOUR
KILLER
DETECTOR
SYNC
SEP
0.5H
KILLER
PHASE
COMPARATOR
H. OSC
V. SYNC
SEP.
V. OSC
SW
CLAMP
MIX
R9576, L9515
C9576
B.P.F.
AMP
GAIN CTL.
AMP
PHASE
SHIFT
GAIN CTL.
AMP
CLAMP
BALANCED
MODULATOR
CLAMP
BALANCED
MODULATOR
CLAMP
OSC
1/2 90°
SHIFTER
PAL CARRIER
WAVE SW
X9502
4.43MHz
X'TAL
OSCILLATOR
(TO I/O PACK)
DIGITAL
VIDEO OUT
P9501
11
(FROM SYSTEM CTL.)
SERIAL
CLK.
P9501
2
(FROM SYSTEM CTL.)
SERIAL
DATA
P9501
3
(TO AUDIO)
AUDIO
TV IN TV Ⓗ
P9501
6
(TO I/O PACK)
TV IN TV/P.B Ⓛ
P9501
5
QR9002
REG 12V
INV SW1
SW1
QR9004
QR9001
REG 12V
QR9003
INV SW0
SW0
IC 9007
(MN15522VML)
(DIGITAL MICROPROCESSOR)
SW1 Ⓗ
SW0 Ⓗ
MAIN
(VEP0
Y SIGNAL
B-Y SIGNAL
R-Y SIGNAL
IC 9002 (MN65531S) (A/D CONVERTER)
Y
B-Y
R-Y
CLAMP
A/D
OUT
CLOCK
GENERATOR
CLK
CHRO.
CLAMP
PULSE
LUMI.
CLAMP
PULSE
(4)
(3)
(2)
CHROMA CLAMP
PULSE
C VSYNC
C HSYNC
P
HSYNC
IC 9003 (MN6790)
PHASE
COMPARATOR
21.4MHz
VCO
1/684
INPUT SIG
IC9003, 4 - 9PIN
L
H
IC900
QR9501
INV.
INV
P HSYNC
P VSYNC
(1)
Y SIGNAL
R-Y SIGNAL
B-Y
SIGNAL
SUB CARR.
(90°)
SUB CARR. (0°)
DIGITAL
SELECT Ⓗ
Q9004
BUFFER
FL9008
L.P.F.
Q9002
BUFFER
Q9005
BUFFER
Q9003
BUFFER
QR9006
INVERTER
IC 9008 (MN65
(D/A CONVERTER
D/A OUT
BLANKING
PULSE
IC9007 (MN15522VML)
(DIGITAL MICROPROCESSOR)
V SYNC
DETECT
SYSTEM CTL.
SERIAL CLK
QR9005
INVERTER
SERIAL DATA
SYSTEM CTL.
SERIAL DATA
AUDIO
TV IN TV Ⓗ
TV IN TV/
PB Ⓛ

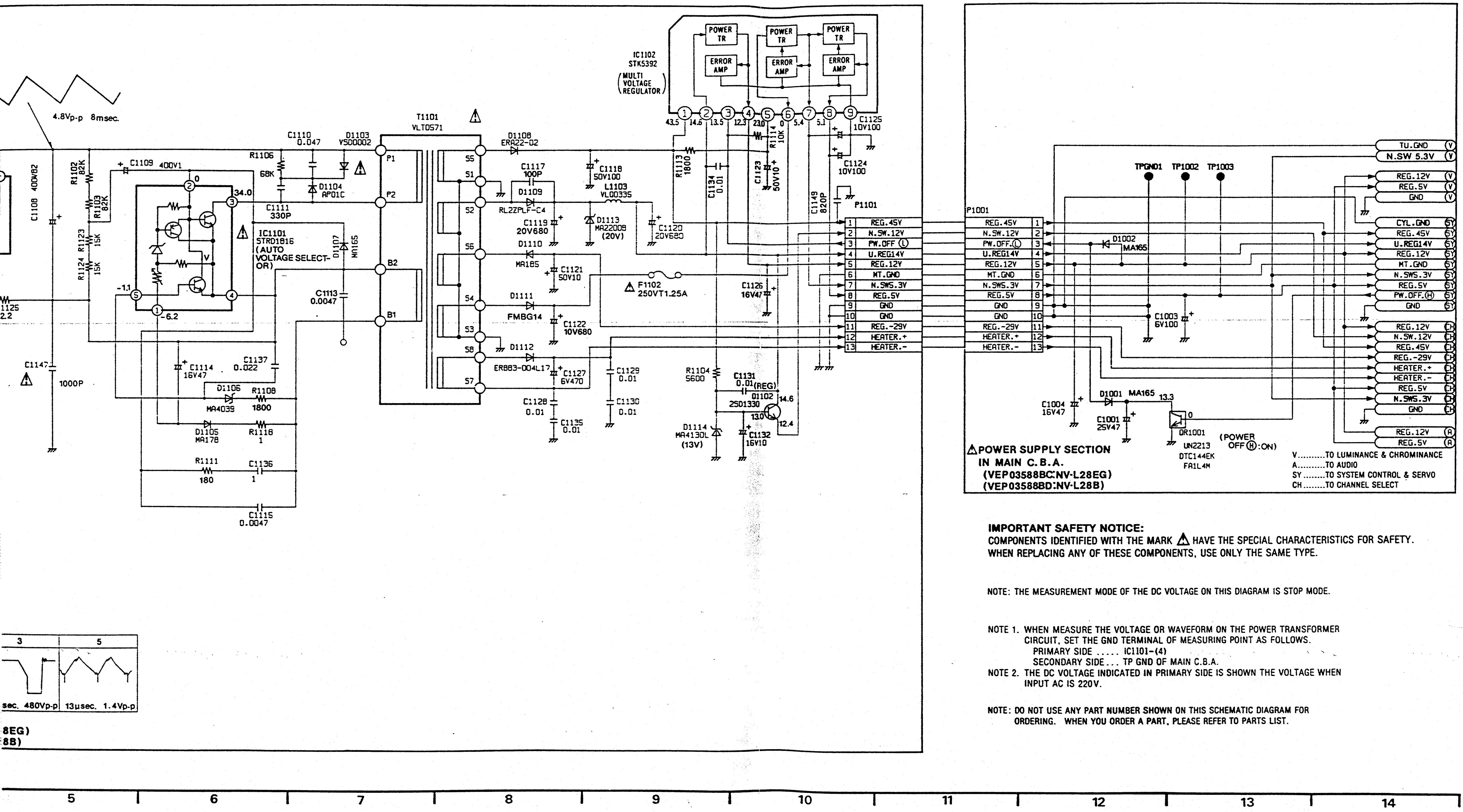

MAIN DIGITAL C.B.A.
(VEP03669B)
IC 9007
(MN15522VML)
(DIGITAL MICROPROCESSOR)
24 SW 1 Ⓗ
23 SW 0 Ⓗ
LUMINANCE SW SIG.
B - Y SIG
R - Y SIG.
MIXED SIG.
R-Y
LUMI
B-Y
531S) (A/D CONVERTER)
A/D OUT
CLOCK GENERATOR
20 D6
15 D1
6 BIT DIGITAL DATA
10
11
9
14 CLK
LUMI. CLAMP PULSE
(4)
(3)
(2)
5790)
RATOR
21.4MHz VCO
1/2
1/684
MODE DECODER
MOD. CTL. SIGNAL
(FROM IC9007 - 22)
IC 9004 (MN6790)
PHASE COMPARATOR
21.4 MHz VCO
IC 9001 (MN4714F)(GATE ARRAY & MEMORY)
FL9008
L.P.F.
Q9005
BUFFER
IC 9008 (MN6559S)
(D/A CONVERTER)
D/A OUT
BLANKING PULSE
DA6 26
DA1 21
DB6 19
DB1 14
6 BIT DATA
1 LUMINANCE CLAMP PULSE
18 CHRO. A/D DATA IN
13
9 LUMI. A/D DATA IN
4
40 P VSYNC
82 Y SELECT OUT
84 B-Y SELECT OUT
83 R-Y SELECT OUT
44 C VSYNC
38 DIGITAL SELECT Ⓗ
24 CLK 1 IN
26 CLK 2 IN
C FH IN 27
P FH IN 25
A/D DATA IN
81
76
19
20
23
(MN15522VML)
MICROPROCESSOR)
5 V SYNC DETECT
EM CTL.
L CLK
L DATA
M CTL.
DATA
TV Ⓗ
TV /
GATE ARREY SERIAL CLK 13
GATE ARREY SERIAL CLK 14
RESET Ⓛ 10
X9001
26
27
RESET Ⓛ 25
IC9006
(MN1280R)
(RESET)
REG 5V

INPUT SIG.		OSCILLATING CONDITION
IC9003.4 - 9PIN	IC9003.4 - 7PIN	
L	L	ON
H	H	STOP

Next Page:
POWER Section

3-4. POWER SCHEMATIC DIAGRAM


F
E
D
C
B
A
1
2
3
4
5
P1102
AC INLET
F1101
250VT1.5A
(NV-L28B ONLY)
(NV-L28EG ONLY)
L1101
ELF18
D221F
C1145
470P:
NV-L28EG
330P:
NV-L28B
D1101
SNR300K4
(NV-L28B ONLY)
(NV-L28B ONLY)
C1142
470P:
NV-L28EG
330P:
NV-L28B
L1102
ELF18D221F:NV-L28EG
ELF18D290A:NV-L28B
C1101
0.15:NV-L28EG
0.056:NV-L28B
R1101
330K
D1102
S1WBA60
C1102
0.1:NV-L28EG
0.033:NV-L28B
R1125
2.2
C1108 400V82
C1147
1000P
R1102
82K
R1103
82K
R1123
15K
R1124
15K
4.8Vp-p 8mse
WAVEFORMS OF IC1101
1
2
3
5
13μsec. 0.4Vp-p
13μsec. 1.7Vp-p
13μsec. 480Vp-p
13μsec. 1.
POWER C.B.A. (VEP01353J:NV-L28EG)
(VEP01353H:NV-L28B)


4.8Vp-p 8msec.
C1108 400V82
R1102 82K
R1103 82K
R1123 15K
R1124 15K
C1109 400V1
R1106 68K
C1110 0.047
D1103 VSD0002
D1104 AP01C
C1111 330P
IC1101 STRD1816 (AUTO VOLTAGE SELECTOR)
D1107 MA165
C1113 0.0047
C1147 1000P
C1114 16V47
C1137 0.022
D1106 MA4039
R1108 1800
D1105 MA178
R1118 1
R1111 180
C1136 1
C1115 0.0047
T1101 VLT0571
P1 P2 B2 B1
S5 S1 S2 S6 S4 S3 S8 S7
D1108 ERA22-02
C1117 100P
D1109 RL2ZPLF-C4
C1119 20V680
D1110 MA165
C1121 50V10
D1111 FMBG14
C1122 10V680
D1112 ER883-004L17
C1127 6V470
C1128 0.01
C1135 0.01
C1118 50V100
L1103 VL00335
D1113 MA22008 (20V)
C1120 20V680
C1129 0.01
C1130 0.01
F1102 250VT1.25A
IC1102 STK5392 (MULTI VOLTAGE REGULATOR)
POWER TR
ERROR AMP
R1113 1800
C1134 0.01
C1123 50V10
R1114 10K
C1149 820P
C1124 10V100
C1125 10V100
C1126 16V47
R1104 5600
C1131 0.01
Q1102 2SD1330 (REG)
D1114 MA4130L (13V)
C1132 16V10
P1101
P1001
REG.45V
N.SW.12V
PW.OFF Ⓛ
U.REG14V
REG.12V
MT.GND
N.SWS.3V
REG.5V
GND
REG.-29V
HEATER.+
HEATER.-
TPGND1 TP1002 TP1003
D1002 MA165
C1003 6V100
C1004 16V47
C1001 25V47
D1001 MA165
QR1001 UN2213 DTC144EK FA1L4M
(POWER OFF Ⓗ:ON)
TU.GND Ⓥ
N.SW 5.3V Ⓥ
REG.12V Ⓥ
REG.5V Ⓥ
GND Ⓥ
CYL.GND ⓈⓎ
REG.45V ⓈⓎ
U.REG14V ⓈⓎ
REG.12V ⓈⓎ
MT.GND ⓈⓎ
N.SWS.3V ⓈⓎ
REG.5V ⓈⓎ
PW.OFF.Ⓗ ⓈⓎ
GND ⓈⓎ
REG.12V ⒸⒽ
N.SW.12V ⒸⒽ
REG.45V ⒸⒽ
REG.-29V ⒸⒽ
HEATER.+ ⒸⒽ
HEATER.- ⒸⒽ
REG.5V ⒸⒽ
N.SWS.3V ⒸⒽ
GND ⒸⒽ
REG.12V Ⓐ
REG.5V Ⓐ
sec. 480Vp-p
13μsec. 1.4Vp-p
8EG)
8B)
5 6 7 8 9 10 11 12 13 14

⚠POWER SUPPLY SECTION IN MAIN C.B.A.
(VEP03588BC:NV-L28EG)
(VEP03588BD:NV-L28B)

V..........TO LUMINANCE & CHROMINANCE
A..........TO AUDIO
SY........TO SYSTEM CONTROL & SERVO
CH........TO CHANNEL SELECT

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

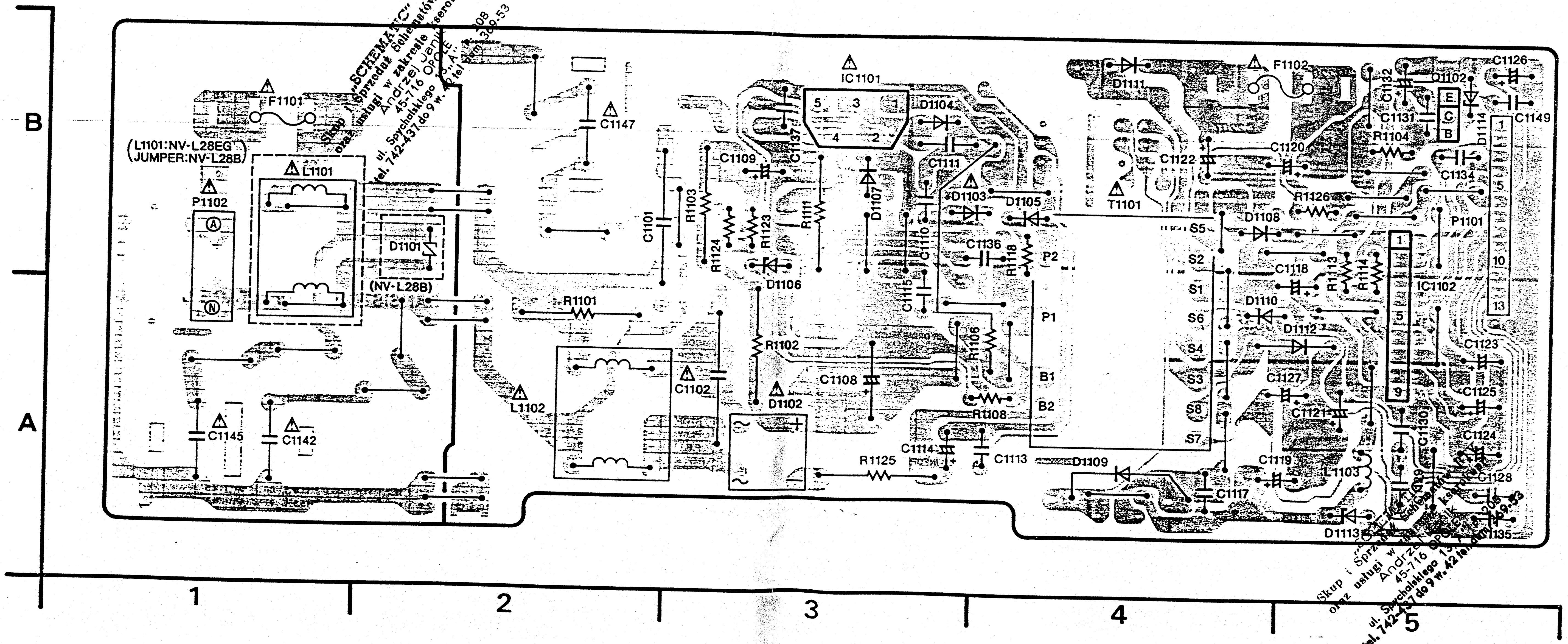
NOTE 1. WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT, SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE ..... IC1101-(4)
SECONDARY SIDE... TP GND OF MAIN C.B.A.
NOTE 2. THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 220V.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-5. POWER C.B.A. (VEP01353J: NV-L28EG) (VEP01353H: NV-L28B)

POWER C.B.A.	
Transistor	
Q1102	B-5
Integrated Circuit	
IC1101 IC1102	B-3 B-5
Connector	
P1101 P1102	B-5 B-1

ADDRESS INFORMATION


B
A
1
2
3
4
5
F1101
(L1101:NV-L28EG)
JUMPER:NV-L28B)
L1101
P1102
Ⓐ
Ⓝ
D1101
(NV-L28B)
C1145
C1142
C1147
R1101
L1102
C1101
C1102
R1103
R1124
R1123
C1109
C1137
R1111
R1102
D1106
D1102
IC1101
5
3
1
4
2
D1104
D1107
C1111
D1103
D1105
C1110
C1115
C1136
R1118
P2
P1
B1
B2
R1106
C1108
R1108
C1114
C1113
R1125
D1109
T1101
S5
S2
S1
S6
S4
S3
S8
S7
D1111
F1102
C1122
C1120
D1108
R1126
C1118
D1110
D1112
C1127
C1121
C1119
C1117
L1103
D1113
C1132
Q1102
E
C
B
C1131
R1104
C1126
C1149
D1114
C1134
P1101
1
5
10
13
IC1102
1
5
9
R1113
R1114
C1123
C1125
C1124
C1128
C1130
C1129
C1135

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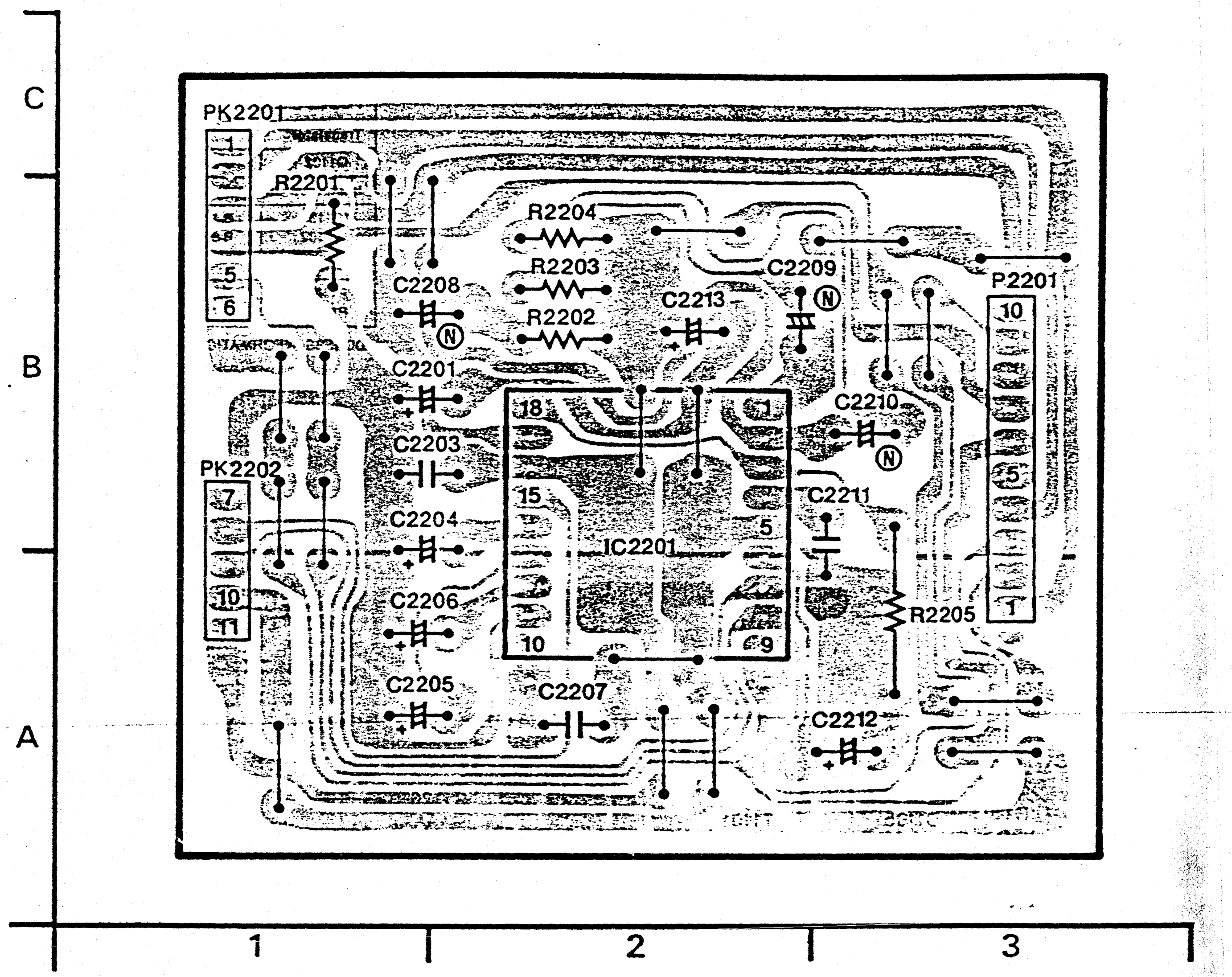
oraz usługi w zakresie kserokopii
Andrzej Janik
45-716 OPOLE
ul. Spychalskiego 13 „A” m. 208
tel. 742-437 do 9 w. 42 tel. dom 369-53

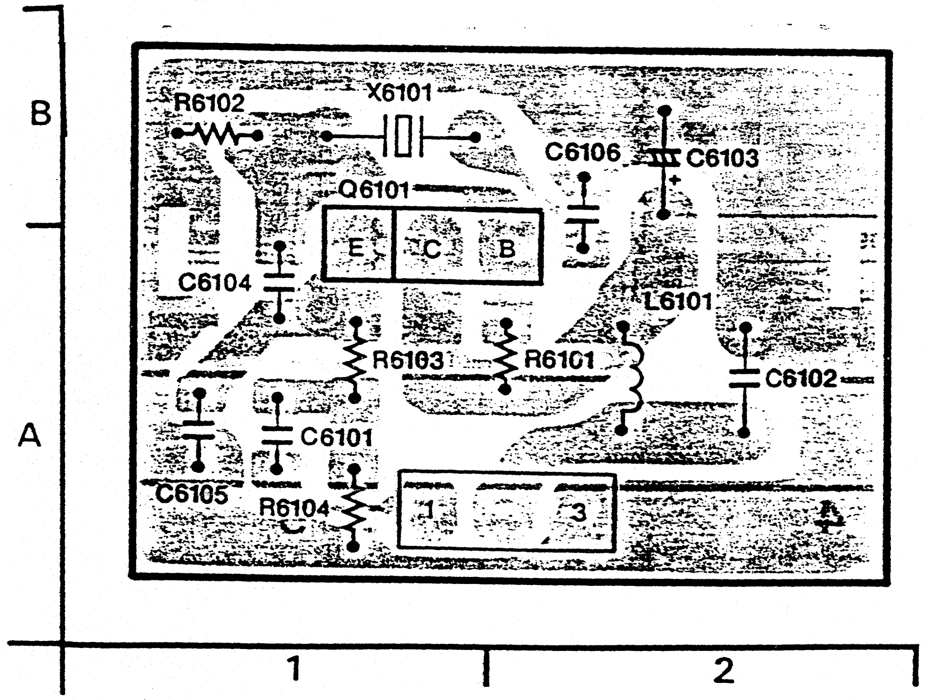
3-6. CYLINDER DRIVE PACK C.B.A. (VEP02329A)



CYLINDER DRIVE PACK C.B.A.	
Integrated Circuit	
IC2201	B-2
Connector	
P2201 PK2201 PK2202	B-3 C-1 A-1

ADDRESS INFORMATION

3-7. OSC PACK C.B.A. (VEP06583A)



OSC PACK C.B.A.	
Transistor	
Q6101	B-1

ADDRESS INFORMATION

Back Page:
POWER Section

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

REF. NO.	IC2001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.0	5.0	0	0	0	0	2.5	3.2	3.2	2.5	4.2	1.6	2.5	3.9	2.5	2.5	2.5	5.0	0	2.5
PLAY	5.0	5.0	0	0	0.2	0	2.5	3.2	3.2	2.4	2.5	2.1	2.5	3.9	2.5	2.5	—	5.0	0	2.5
F.F.	5.0	5.0	0	0	0	0	2.5	3.3	3.3	2.4	4.3	1.6	2.6	2.0	2.5	2.5	—	5.0	0	2.5

REF. NO.	IC2001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	2.5	0	2.5	2.5	1.2	2.9	3.9	2.0	5.0	5.1	0.1	0	0	0	3.1	0.1	5.0	0	5.0	0
PLAY	2.5	0	2.5	2.5	1.2	2.3	3.9	2.9	3.0	1.1	2.9	0	0	0	3.0	0.1	5.0	5.0	5.0	2.3
F.F.	2.5	0	2.5	2.5	1.3	1.4	3.7	3.4	3.1	5.1	0.1	0	0	0	2.8	0.2	5.0	0	5.0	0

REF. NO.	IC2001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.9	2.1	0	5.1	4.7	0	0	5.0	0	0	5.0	0	5.0	0	0	5.0	4.6	0	0	0
PLAY	4.9	0	0	4.9	4.8	4.9	0	5.0	0	5.0	0	5.0	5.0	0	5.0	5.0	4.8	0	0	0
F.F.	4.9	0	0	4.8	4.8	0	0	5.0	0	0	5.0	0	5.0	0	0	5.0	4.5	0	0	0

REF. NO.	IC2001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76				
STOP	0	0	—	2.5	5.0	0	0	0.5	5.0	0	5.0	2.0	5.0	2.0	0	0.1				
PLAY	0	0	—	—	5.0	0	0	0.5	5.0	0	5.0	2.0	0	5.0	0	4.7				
F.F.	0	0	—	—	5.0	0	0	0.5	4.9	0	5.0	2.0	5.0	2.0	0	0.1				

REF. NO.	IC2101																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	7.6	0	7.6	1.4	2.0	1.9	1.9	2.0	2.0	2.0	2.1	0	5.0	3.6	2.7	4.2	5.0	0	0	0
PLAY	1.5	0	1.5	1.3	2.0	2.0	2.0	2.0	2.0	2.0	0	0	5.0	3.7	2.7	2.4	5.0	0.6	0.3	0
F.F.	3.3	0	3.3	1.3	2.0	2.0	2.1	2.1	2.1	2.1	0	0	5.0	3.7	2.7	2.3	5.0	0.6	0.4	0.1

REF. NO.	IC2101																			
MODE	21	22	23	24																
STOP	0	0.4	7.6	14.2																
PLAY	0	0.6	1.5	10.4																
F.F.	0	0.6	3.3	14.3																

REF. NO.	IC2201																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
STOP	13.7	13.7	0	0	0	2.4	4.3	0.6	0.4	1.0	4.8	4.0	4.0	3.6	4.8	13.7	13.7	0		
PLAY	9.9	9.9	0	0.5	0	2.4	2.3	0.5	0.5	2.5	4.8	3.5	3.5	3.5	1.0	10.1	9.9	0		
F.F.	13.7	13.7	0	0	0	2.4	4.3	0.6	0.4	1.1	4.8	4.0	4.0	3.6	4.8	13.7	13.7	0		

REF. NO.	IC2301										IC2302									
MODE	1	2	3	4	5	6	7	8	9		1	2	3	4	5	6	7	8	9	
STOP	5.0	2.5	2.5	2.5	0	2.5	2.5	2.5	5.0		5.0	0.5	2.5	2.5	0	2.5	2.5	0.6	5.0	
PLAY	5.0	2.5	2.5	2.5	0	2.5	2.5	2.5	5.0		5.0	1.6	2.5	2.4	0	2.4	2.5	1.5	5.0	
F.F.	5.0	2.5	2.5	2.5	0	2.5	—	2.5	5.0		5.0	1.3	2.5	2.5	0	2.5	2.5	1.3	5.0	

REF. NO.	IC6003																			
MODE	1	2	3																	
STOP	5.0	5.0	0																	
PLAY	5.0	5.0	0																	
F.F.	5.0	5.0	0																	

SYSTEM CONTROL & SERVO TRANSISTORs DC VOLTAGE CHART (SP MODE)

REF. NO.	Q2001			Q2002			Q2003			Q2301			Q2302			Q2303		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0.4	2.5	1.0	5.1	5.4	5.8	5.0	4.1	5.0	0.3	2.7	1.0	0.6	0	0.6	0.6	0	0.5
PLAY	0.4	2.4	1.0	5.1	5.4	5.8	5.0	4.6	5.0	0.3	2.6	1.0	1.6	0.9	1.8	1.6	0.9	1.8
F.F.	0.4	2.4	1.0	5.1	5.4	5.8	5.0	4.0	5.0	0.4	2.6	1.0	1.3	1.0	1.3	1.3	1.0	—

REF. NO.	Q6001			Q6002			Q6003			Q6004			Q6005			Q6006		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	−0.1	15.8	0.1	1.7	15.8	1.9	−0.1	0	0	0.8	14.2	0.5	12.3	0	12.2	12.2	12.2	11.5
PLAY	−0.1	15.6	0.2	1.6	15.6	2.0	−0.1	0.6	0	0.6	10.5	0.5	12.3	12.2	0.1	12.2	12.2	11.4
F.F.	−0.1	15.7	0.5	2.1	15.7	2.3	−0.1	2.6	0	0.9	14.2	0.5	12.3	0	12.2	12.2	12.2	11.4

REF. NO.	Q6007			Q6008			Q6009			Q6010			Q6011					
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B			
STOP	12.2	0.5	12.2	14.4	15.8	14.9	12.2	2.1	12.2	14.7	44.8	15.2	0	0	4.5			
PLAY	12.2	−0.2	12.2	10.5	15.6	11.0	12.2	2.1	12.2	11.0	45.1	11.6	0	0	4.5			
F.F.	12.2	0.5	12.1	14.3	15.7	14.8	12.2	2.1	12.1	14.8	44.9	15.3	0	0	4.5			

REF. NO.	QR2002			QR2004			QR2005			QR2402			QR2403			QR2405		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	1.1	0	0	0	2.3	0	2.3	0	5.0	0.1	5.0	5.0	5.0	0.1	0	4.5	0
PLAY	0	0	5.0	0	0	2.3	0	2.3	0	5.0	0.1	5.0	5.0	5.0	0.1	0	4.5	0
F.F.	0	1.1	0	0	0	2.3	0	2.3	0	5.0	0.1	5.0	5.0	5.0	0.1	0	4.5	0

REF. NO.	QR6002			QR6003			QR6004			QR6005			QR6006			QR6007		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	5.0	0	5.0	5.0	0.6	4.6	0	12.2	0	0	12.2	0	0	0	4.6	0	15.2	0
PLAY	5.0	0	5.0	5.0	0.5	4.5	0	12.2	0	0	0.1	5.0	0	0	4.6	0	0.1	5.0
F.F.	5.0	0	5.0	5.0	0.5	4.4	0	12.1	0	0	12.2	0	0	0	4.6	0	15.3	0

REF. NO.	QR6008			QR6011			QR6012			QR6201			QR6202					
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B			
STOP	0	12.1	0	0	2.3	0	0	2.9	0	5.1	0	5.0	0	5.0	0			
PLAY	0	12.2	0	0	2.0	0	0	3.0	0	5.1	0	5.0	0	5.0	0			
F.F.	0	12.1	0	0	2.3	0	0	2.9	0	5.1	0	5.0	0	5.0	0			

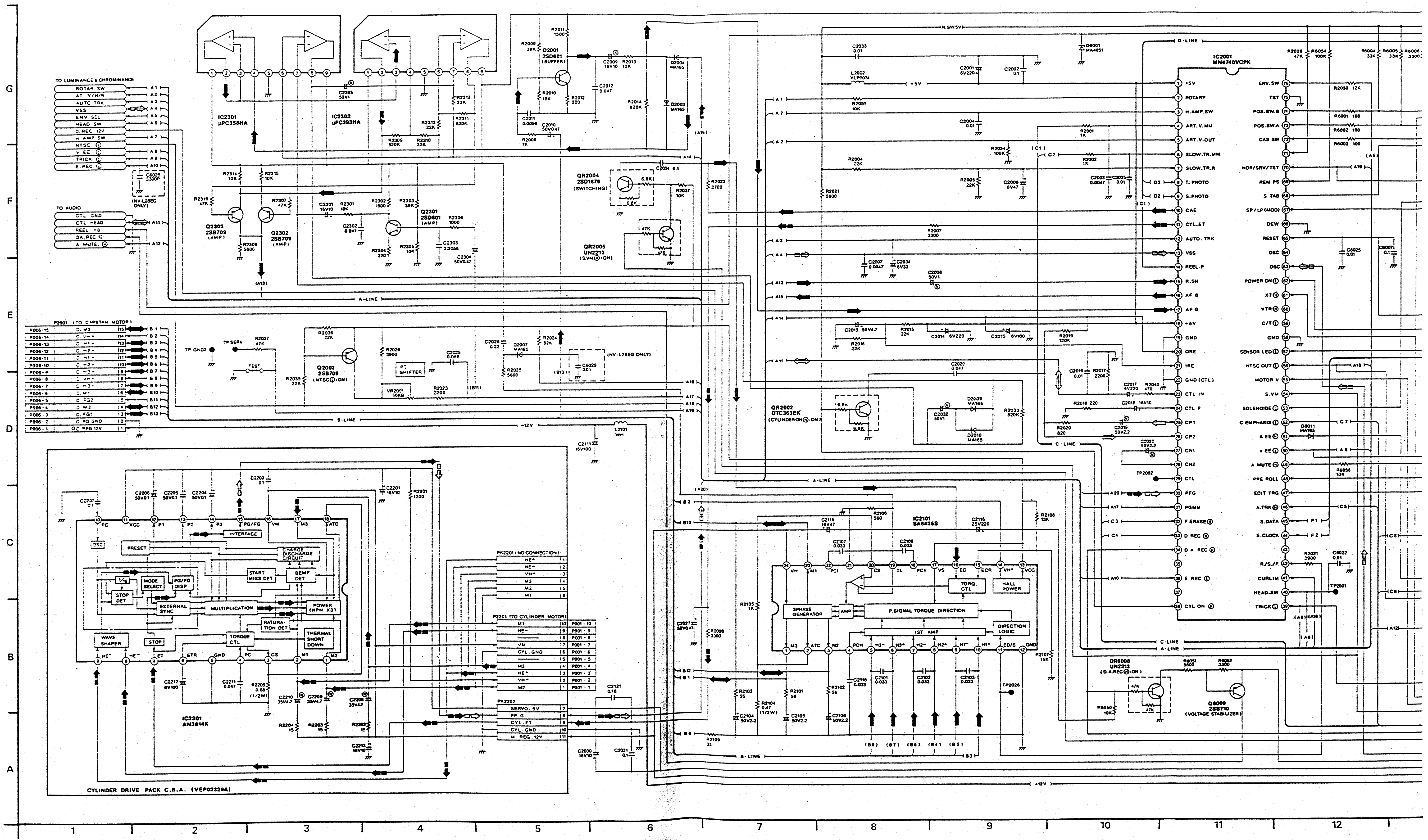
3-8. SYSTEM CONTROL & SERVO SCHEMATIC DIAGRAM

CAPSTAN SERVO SPEED LOOP

CAPSTAN SERVO PHASE LOOP

CYLINDER SERVO SPEED LOOP

CYLIND


G
F
E
D
C
B
A
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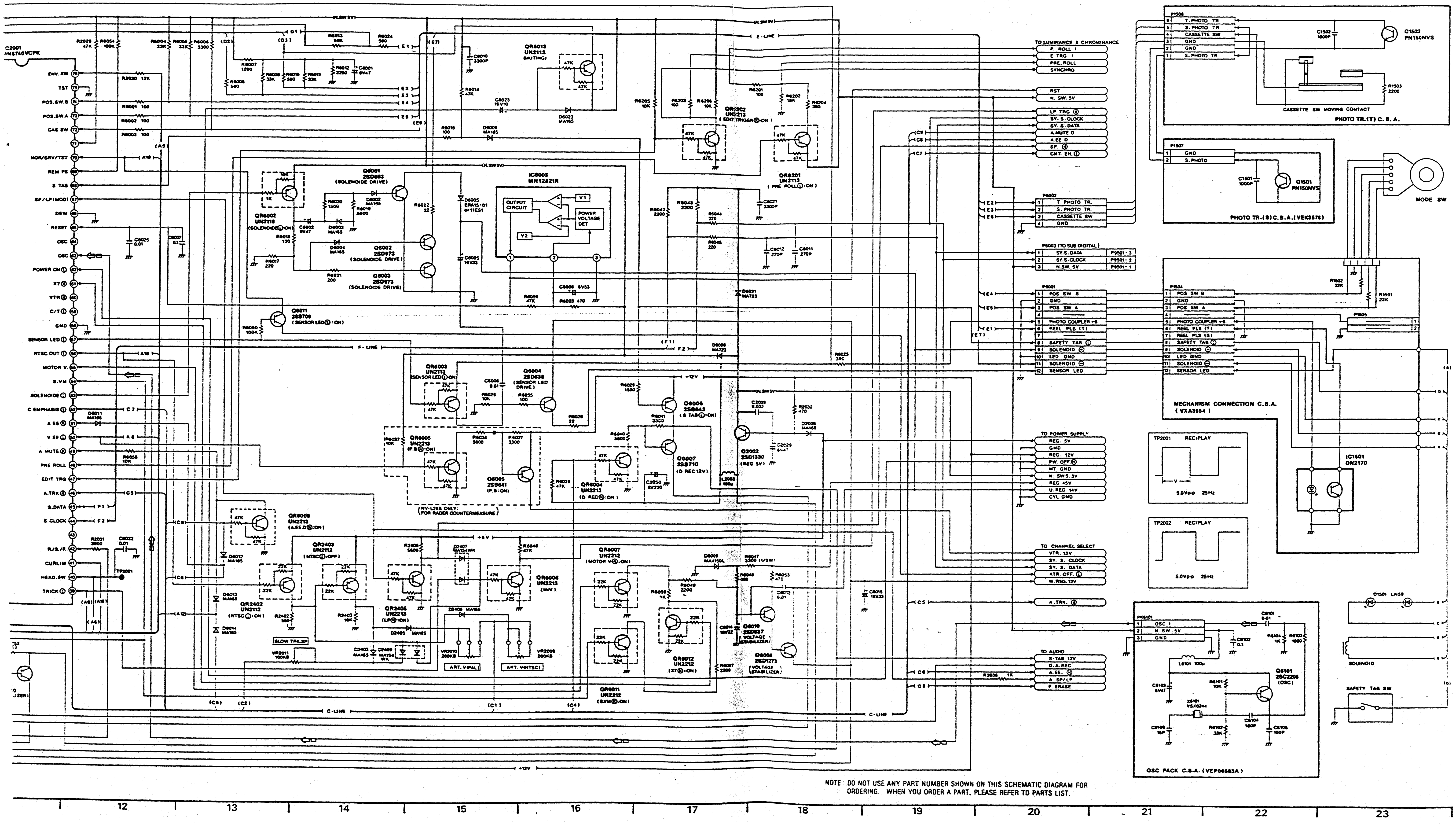
9
10
11
12
TO LUMINANCE & CHROMINANCE
ROTAR SW
AT V/H/N
AUTO TRK
VSS
ENV SEL
HEAD SW
D.REC 12V
H AMP SW
NTSC
V EE
TRICK
E.REC
C6028 3300P
(NV-L28EG ONLY)
TO AUDIO
CTL GND
CTL HEAD
REEL +B
DA REC 12
A MUTE
IC2301 µPC358HA
IC2302 µPC393HA
Q2303 2SB709 (AMP)
Q2302 2SB709 (AMP)
Q2301 2SD601 (AMP)
Q2001 2SD601 (BUFFER)
QR2004 2SD1676 (SWITCHING)
QR2005 UN2213 (S.VM ON)
A-LINE
B-LINE
C-LINE
+12V
(N.SW5V)
D-LINE
P2001 (TO CAPSTAN MOTOR)
TP.GND2
TP SERV
TEST
Q2003 2SB709 (NTSC ON)
PC SHIFTER
VR2001 50KB
(NV-L28EG ONLY)
IC2001 MN6740VCPK
+5V
ROTARY
H.AMP.SW
ART.V.MM
ART.V.OUT
SLOW.TR.MM
SLOW.TR.R
T.PHOTO
S.PHOTO
CAE
CYL.ET
AUTO.TRK
VSS
REEL.P
R.SH
AF B
AF G
+5V
GND
ORE
IRE
GND (CTL)
CTL IN
CTL P
CP1
CP2
CN1
CN2
CTL
PFG
PGMM
F ERASE
D REC
D A REC
E REC
CYL ON
ENV.SW
TST
POS.SW.B
POS.SW.A
CAS SW
NOR/SRV/TST
REM PS
S TAB
SP/LP(MOD)
DEW
RESET
OSC
OSC
POWER ON
X7
VTR
C/T
GND
SENSOR LED
NTSC OUT
MOTOR V.
S.VM
SOLENOIDE
C EMPHASIS
A EE
V EE
A MUTE
PRE ROLL
EDIT TRG
A.TRK
S.DATA
S.CLOCK
R/S./F
CURLIM
HEAD.SW
TRICK
QR2002 DTC363EK (CYLINDER ON ON)
IC2101 BA6435S
3PHASE GENERATOR
AMP
P.SIGNAL TORQUE DIRECTION
TORQ CTL
HALL POWER
IST AMP
DIRECTION LOGIC
TP2026
TP2002
TP2001
QR6008 UN2213 (D.A.REC ON)
Q6009 2SB710 (VOLTAGE STABILIZER)
IC2201 AN3814K
PRESET
INTERFACE
CHARGE DISCHARGE CIRCUIT
START MISS DET
BEMF DET
MODE SELECT
PG/FG DISP
STOP DET
EXTERNAL SYNC
MULTIPLICATION
POWER (NPN X3)
RATURATION DET
THERMAL SHORT DOWN
WAVE SHAPER
STOP
TORQUE CTL
PK2201 (NO CONNECTION)
P2201 (TO CYLINDER MOTOR)
PK2202
SERVO 5V
PF.G
CYL.ET
CYL.GND
M. REG. 12V
CYLINDER DRIVE PACK C.B.A. (VEP02329A)

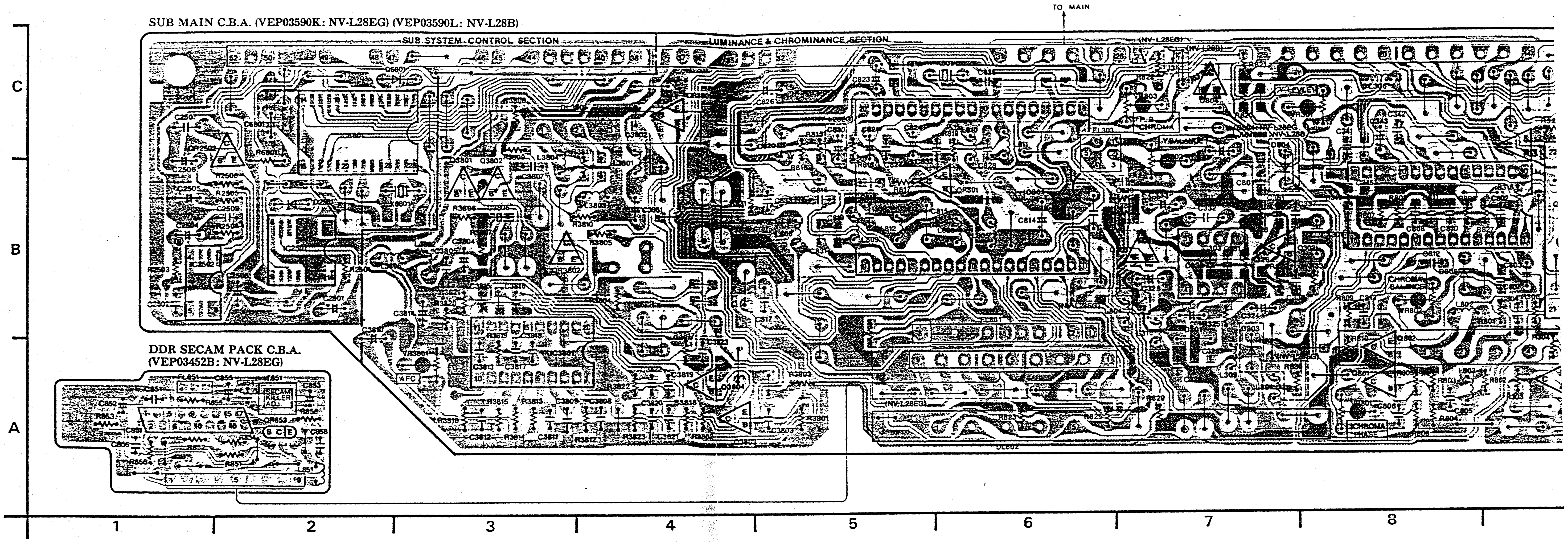
OOP

⇦□ CYLINDER SERVO PHASE LOOP

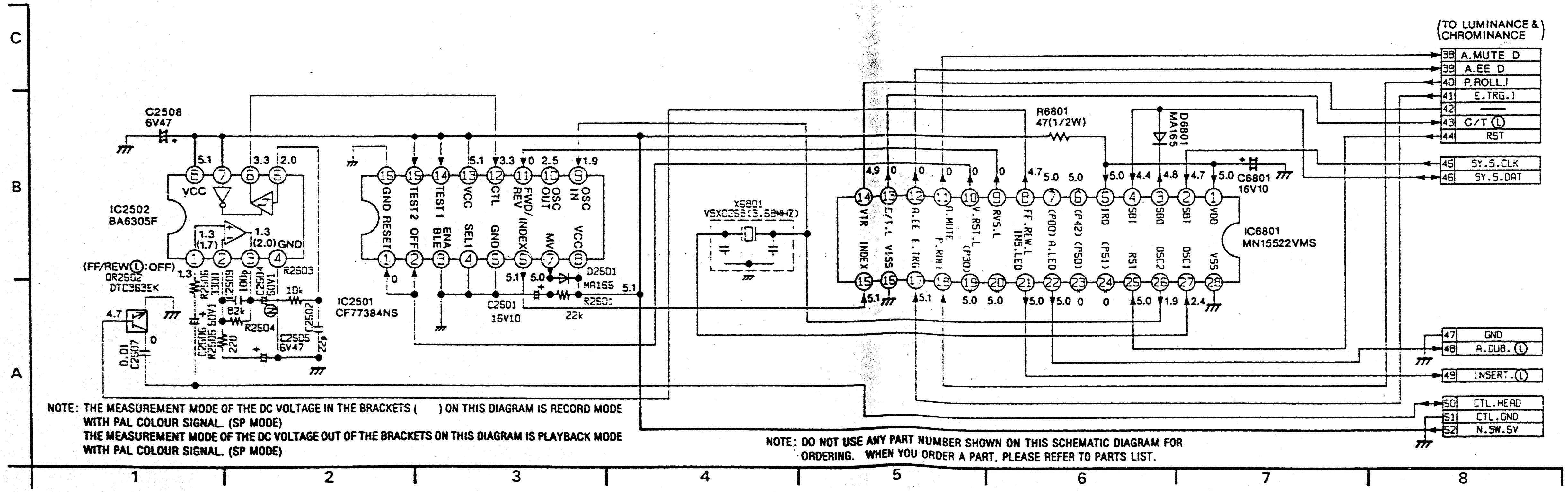

IC6003 MN12821R
OUTPUT CIRCUIT
POWER VOLTAGE DET
TO LUMINANCE & CHROMINANCE
PHOTO TR.(T) C.B.A.
CASSETTE SW MOVING CONTACT
PHOTO TR.(S) C.B.A.(VEK3578)
MODE SW
MECHANISM CONNECTION C.B.A. (VXA3554)
TO POWER SUPPLY
TO CHANNEL SELECT
TO AUDIO
IC1501 DN2170
OSC PACK C.B.A. (VEP06583A)
SOLENOID
SAFETY TAB SW
C-LINE
F-LINE
E-LINE
12
13
14
15
16
17
18
19
20
21
22
23

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-9. SUB MAIN C.B.A. (VEP03590K: NV-L28EG) (VEP03590L: NV-L28B)


SUB MAIN C.B.A. (VEP03590K: NV-L28EG) (VEP03590L: NV-L28B)
SUB SYSTEM CONTROL SECTION
LUMINANCE & CHROMINANCE SECTION
TO MAIN
DDR SECAM PACK C.B.A. (VEP03452B: NV-L28EG)
SECAM KILLER ADJ.
AFC
CHROMA BALANCE
CHROMA PHASE
Y BALANCE
C
B
A
1
2
3
4
5
6
7
8

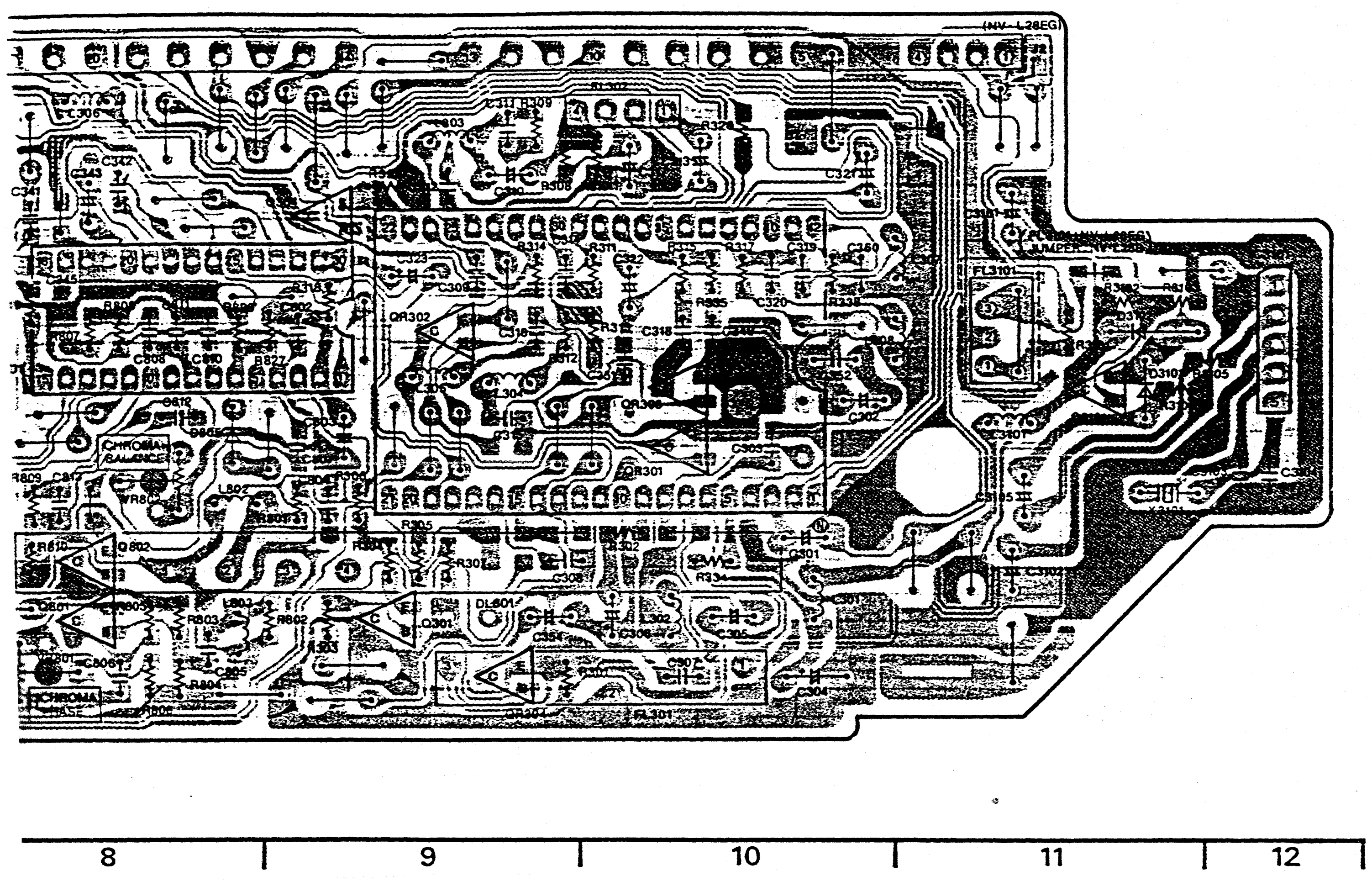
3-10. SUB MAIN (SUB SYSTEM CONTROL) SCHEMATIC DIAGRAM


(TO LUMINANCE & CHROMINANCE)
38 A.MUTE D
39 A.EE D
40 P.ROLL.I
41 E.TRG.I
42 ——
43 C/T Ⓛ
44 RST
45 SY.S.CLK
46 SY.S.DAT
47 GND
48 A.DUB. Ⓛ
49 INSERT. Ⓛ
50 CTL.HEAD
51 CTL.GND
52 N.SW.5V
C2508 6V47
IC2502 BA6305F
VCC
GND
(FF/REW Ⓛ: OFF)
QR2502 DTC363EK
C2507 0.01
R2503
R2504
C2505 6V47
IC2501 CF77384NS
GND RESET
TEST2 OFF
TEST1 ENA BLE
VCC SEL1
CTL GND
FWD/REV INDEX
OSC OUT MV
OSC IN VCC
D2501 MA165
C2501 16V10
R2501 22k
X6801 VSX0255(3.58MHZ)
R6801 47(1/2W)
D6801 MA165
C6801 16V10
IC6801 MN15522VMS
VTR
INDEX
E/T.I
VISS
A.EE
E.TRG
A.MUTE
P.ROLL
V.RST.L
(P3O)
RVS.L
INS.LED
FF.REW.L
A.LED
(P4O)
(P42)
(P5O)
(P51)
IRQ
SBI
RST
SBO
OSC2
SBT
OSC1
VDD
VSS
1
2
3
4
5
6
7
8

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

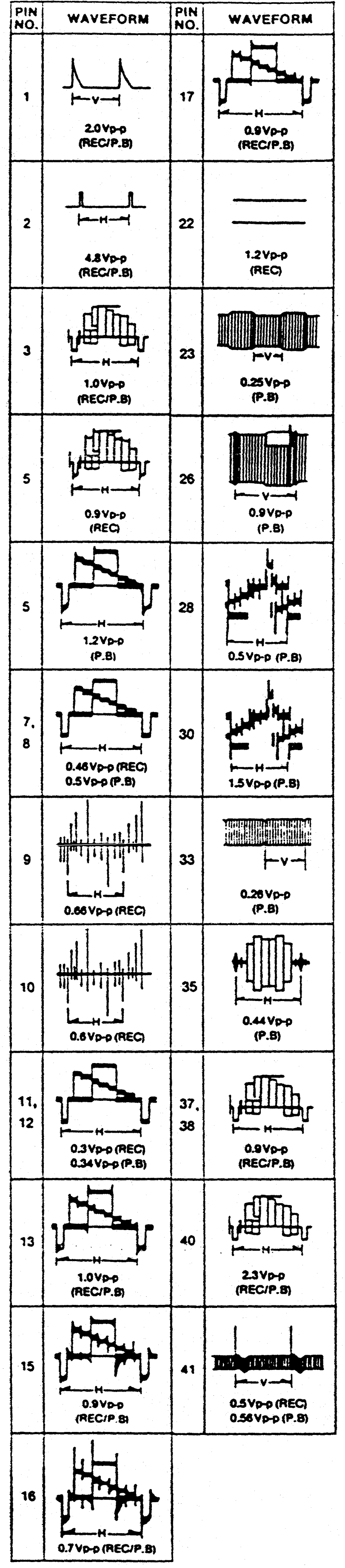
Back Page:
SYSTEM CTL & SERVO Section



SUB MAIN C.B.A.			
Transistor		**Integrated Circuit**	
Q301	A-9	IC301	B-10
Q302	B-7	IC302	B-8
Q303	B-7	IC303	B-7
Q304	C-9	IC801	B-6
Q801	A-8	IC851	A-1
Q802	A-8	IC2501	B-2
Q804	C-7	IC2502	B-1
Q3101	B-11	IC3101	B-12
Q3801	B-3	IC3801	A-3
Q3802	B-3	IC6801	C-2
Q3803	A-4	**Adjustment**	
Q3804	A-4	VR301	C-8
Transistor & Resistor		VR302	C-7
QR301	B-10	VR801	A-8
QR302	B-9	VR802	B-8
QR303	B-10	VR803	C-7
QR304	A-9	VR3801	A-3
QR801	B-6	T851	A-2
QR853	A-2		
QR2502	C-2		
QR3801	C-4		
QR3802	B-3		

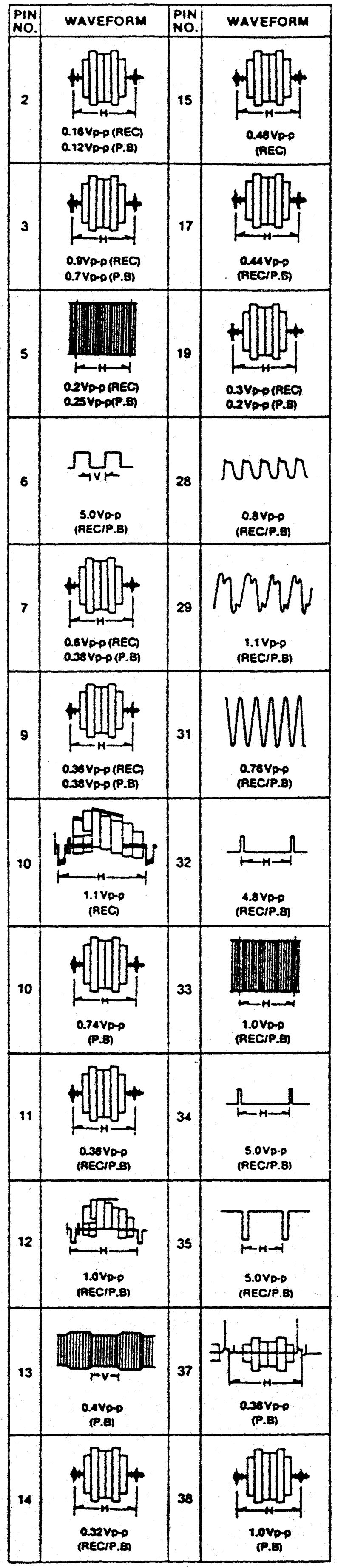
ADDRESS INFORMATION

IC301 (VEFH03D)



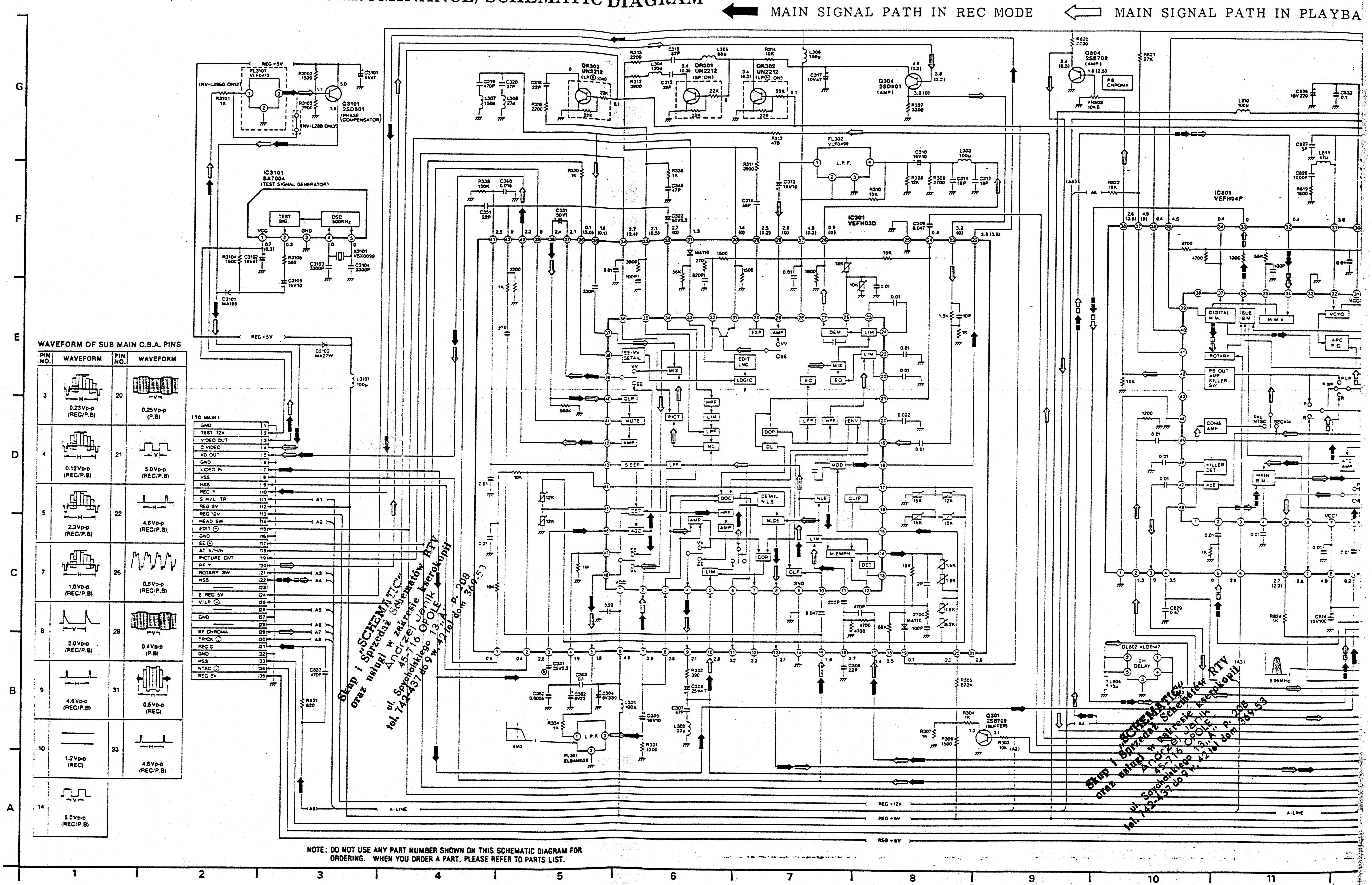
PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
1	V 2.0Vp-p (REC/P.B)	17	H 0.9Vp-p (REC/P.B)
2	H 4.8Vp-p (REC/P.B)	22	1.2Vp-p (REC)
3	H 1.0Vp-p (REC/P.B)	23	V 0.25Vp-p (P.B)
5	H 0.9Vp-p (REC)	26	V 0.9Vp-p (P.B)
5	H 1.2Vp-p (P.B)	28	H 0.5Vp-p (P.B)
7, 8	H 0.46Vp-p (REC) 0.5Vp-p (P.B)	30	H 1.5Vp-p (P.B)
9	H 0.66Vp-p (REC)	33	V 0.26Vp-p (P.B)
10	H 0.6Vp-p (REC)	35	H 0.44Vp-p (P.B)
11, 12	H 0.3Vp-p (REC) 0.34Vp-p (P.B)	37, 38	H 0.9Vp-p (REC/P.B)
13	H 1.0Vp-p (REC/P.B)	40	H 2.3Vp-p (REC/P.B)
15	H 0.9Vp-p (REC/P.B)	41	V 0.5Vp-p (REC) 0.56Vp-p (P.B)
16	H 0.7Vp-p (REC/P.B)		

IC801 (VEFH04F)



PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
2	H 0.16Vp-p (REC) 0.12Vp-p (P.B)	15	H 0.48Vp-p (REC)
3	H 0.9Vp-p (REC) 0.7Vp-p (P.B)	17	H 0.44Vp-p (REC/P.B)
5	H 0.2Vp-p (REC) 0.25Vp-p(P.B)	19	H 0.3Vp-p (REC) 0.2Vp-p (P.B)
6	V 5.0Vp-p (REC/P.B)	28	0.8Vp-p (REC/P.B)
7	H 0.6Vp-p (REC) 0.38Vp-p (P.B)	29	1.1Vp-p (REC/P.B)
9	H 0.36Vp-p (REC) 0.38Vp-p (P.B)	31	0.76Vp-p (REC/P.B)
10	H 1.1Vp-p (REC)	32	H 4.8Vp-p (REC/P.B)
10	H 0.74Vp-p (P.B)	33	H 1.0Vp-p (REC/P.B)
11	H 0.38Vp-p (REC/P.B)	34	H 5.0Vp-p (REC/P.B)
12	H 1.0Vp-p (REC/P.B)	35	H 5.0Vp-p (REC/P.B)
13	V 0.4Vp-p (P.B)	37	H 0.38Vp-p (P.B)
14	H 0.32Vp-p (REC/P.B)	38	H 1.0Vp-p (P.B)

3-11. SUB MAIN (LUMINANCE & CHROMINANCE) SCHEMATIC DIAGRAM


MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBA
IC3101 BA7004 (TEST SIGNAL GENERATOR)
TEST SIG.
OSC 500KHz
X3101 VSX0099
Q3101 2SD601 (PHASE COMPENSATOR)
FL3101 VLF0413
(NV-L28EG ONLY)
(NV-L28B ONLY)
QR303 UN2212 (LP⊖:ON)
QR301 UN2212 (SP:ON)
QR302 UN2212 (LP⊖:ON)
Q304 2SD601 (AMP)
FL302 VLF0499
L.P.F.
IC301 VEFH03D
FL301 ELB4M022
Q301 2SB709 (BUFFER)
Q804 2SB709 (AMP)
PB CHROMA
IC801 VEFH04F
DL802 VLD0147
2H DELAY
D3101 MA165
D3102 MA27W
L3101 100μ
(TO MAIN)
GND
TEST 12V
VIDEO OUT
C VIDEO
VIDEO IN
VSS
HSS
REC Y
S H/L TR
REG 5V
REG 12V
HEAD SW
EDIT ⊖
EE ⊖
AT V/H/N
PICTURE CNT
RF Y
ROTARY SW
E. REC 5V
V.LP ⊖
RF CHROMA
TRICK ⊖
REC C
NTSC ⊖
A-LINE
REG +12V
REG +5V
DIGITAL M.M.
ROTARY
PB OUT AMP KILLER SW
COMB AMP
KILLER DET
MAIN B.M.
VCXO
APC
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11

WAVEFORM OF SUB MAIN C.B.A. PINS

PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
3	0.23Vp-p (REC/P.B)	20	0.25Vp-p (P.B)
4	0.12Vp-p (REC/P.B)	21	5.0Vp-p (REC/P.B)
5	2.3Vp-p (REC/P.B)	22	4.6Vp-p (REC/P.B)
7	1.0Vp-p (REC/P.B)	26	0.8Vp-p (REC/P.B)
8	2.0Vp-p (REC/P.B)	29	0.4Vp-p (P.B)
9	4.6Vp-p (REC/P.B)	31	0.5Vp-p (REC)
10	1.2Vp-p (REC)	33	4.6Vp-p (REC/P.B)
14	5.0Vp-p (REC/P.B)		

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

Skup i Sprzedaż Schematów RTV
oraz usługi w zakresie kserokopii
"SCHEMATIC"
Andrzej Janik
45-716 OPOLE
ul. Spycholskiego 13,"A" p. 208
tel. 742-437 do 9 w. 42 tel. dom 369-53

Skup i Sprzedaż Schematów RTV
oraz usługi w zakresie kserokopii
"SCHEMATIC"
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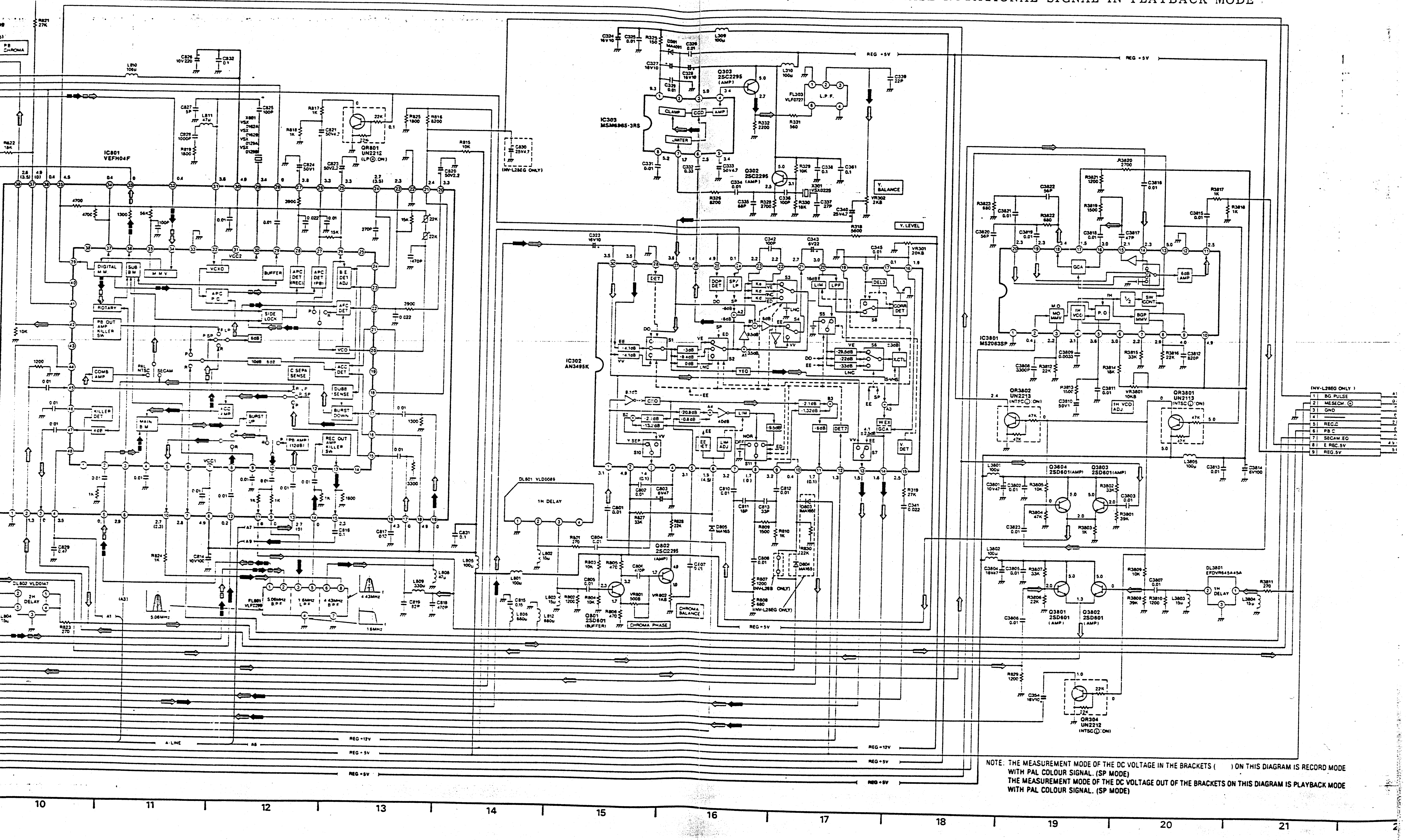
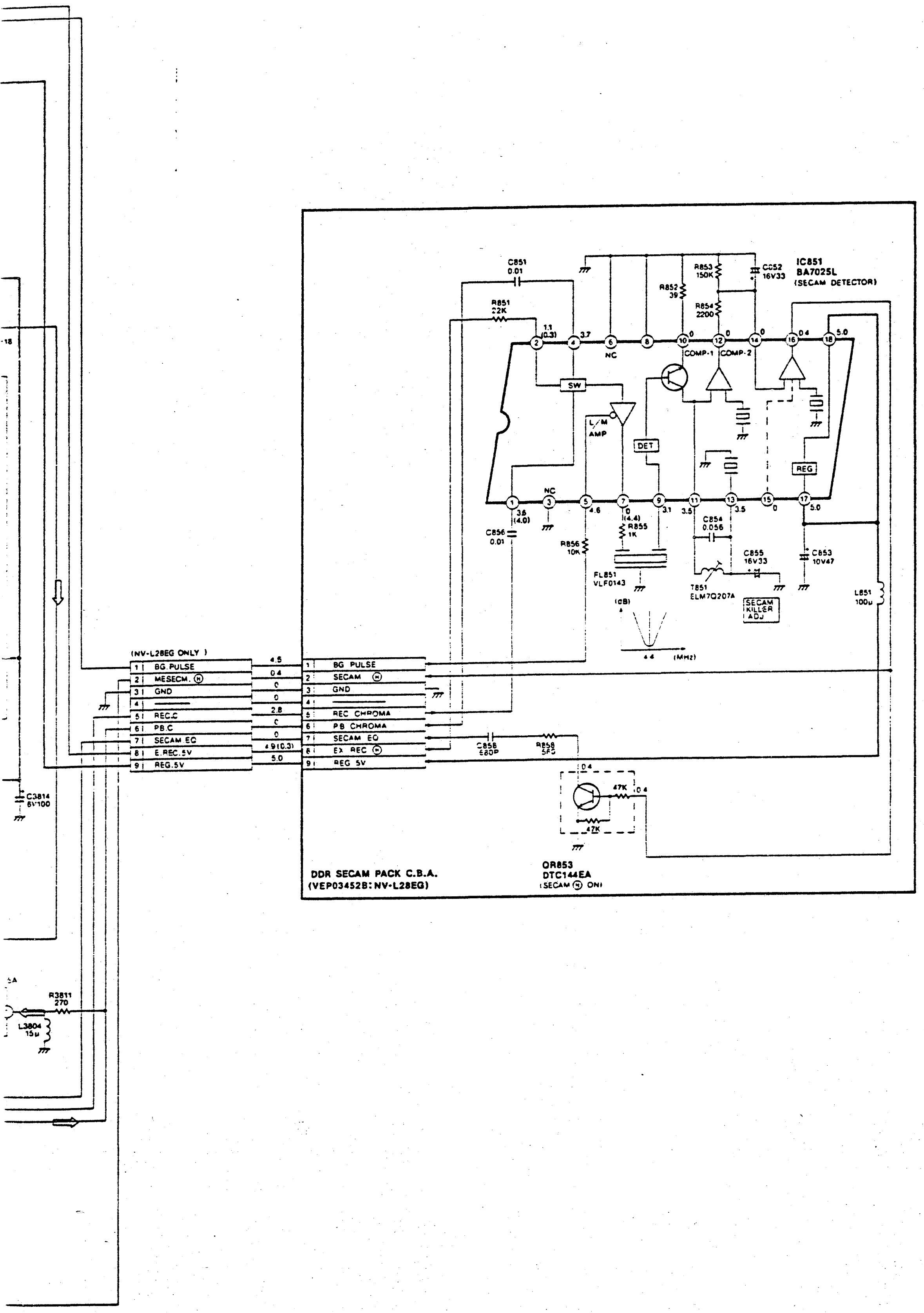
45-716 OPOLE
ul. Spycholskiego 13,"A" p. 208
tel. 742-437 do 9 w. 42 tel. dom 369-53

MAIN SIGNAL PATH IN PLAYBACK MODE ◀■ 5.06MHz PHASE ROTATIONAL SIGNAL IN REC MODE ◁□ 5.06MHz PHASE ROTATIONAL SIGNAL IN PLAYBACK MODE


IC801
VEFH04F
DIGITAL M.M.
SUB B.M
M M V
VCXO
BUFFER
APC DET (REC)
APC DET (PB)
B.E DET ADJ
APC P.C
SIDE LOCK
AFC DET
ROTARY
PB OUT AMP KILLER SW
VCO
ACC DET
C SEPA SENSE
DUBB SENSE
COMB AMP
KILLER DET
MAIN B.M
ACC AMP
BURST UP
BURST DOWN
PB AMP (12dB)
REC OUT AMP KILLER SW
QR801
UN2212
(LP①ON)
(NV-L28EG ONLY)
FL801
VLF0299
5.06MHz B.P.F
1.6MHz L.P.F
4.43MHz B.P.F
5.06MHz
4.43MHz
1.6MHz
DL802 VLD0147
2H DELAY
A-LINE
IC303
MSM6965-3RS
CLAMP
CCD
AMP
LIMITER
Q303
2SC2295
(AMP)
FL303
VLF0727
L.P.F.
Q302
2SC2295
(AMP)
X301
VSX0225
Y. BALANCE
Y. LEVEL
REG +5V
IC302
AN3495K
DET
DOP DET
SP/LP
LIM
LPF
DEL3
CORR DET
YEQ
X.CTL
LNC
CEQ
LIM
EE ET
LIM ADJ
NOR
W.EX GCA
V DET
DL801 VLD0089
1H DELAY
Q802
2SC2295
(AMP)
Q801
2SD601
(BUFFER)
CHROMA PHASE
CHROMA BALANCE
(NV-L28EG ONLY)
IC3801
MS2063SP
GCA
6dB AMP
MO MMV
1H VCO
P.D
1/2
SW CONT
BGP MMV
1H VCO ADJ
QR3802
UN2213
(NTSC①:ON)
QR3801
UN2113
(NTSC①:ON)
Q3804
2SD601(AMP)
Q3803
2SD601(AMP)
Q3801
2SD601
(AMP)
Q3802
2SD601
(AMP)
DL3801
EFDVR645A45A
1H DELAY
QR304
UN2212
(NTSC①:ON)
(NV-L28EG ONLY)
1 BG PULSE
2 MESECM.
3 GND
4
5 REC.C
6 PB C
7 SECAM.EO
8 E REC.5V
9 REG.5V
REG +12V
REG +5V
10
11
12
13
14
15
16
17
18
19
20
21

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

E

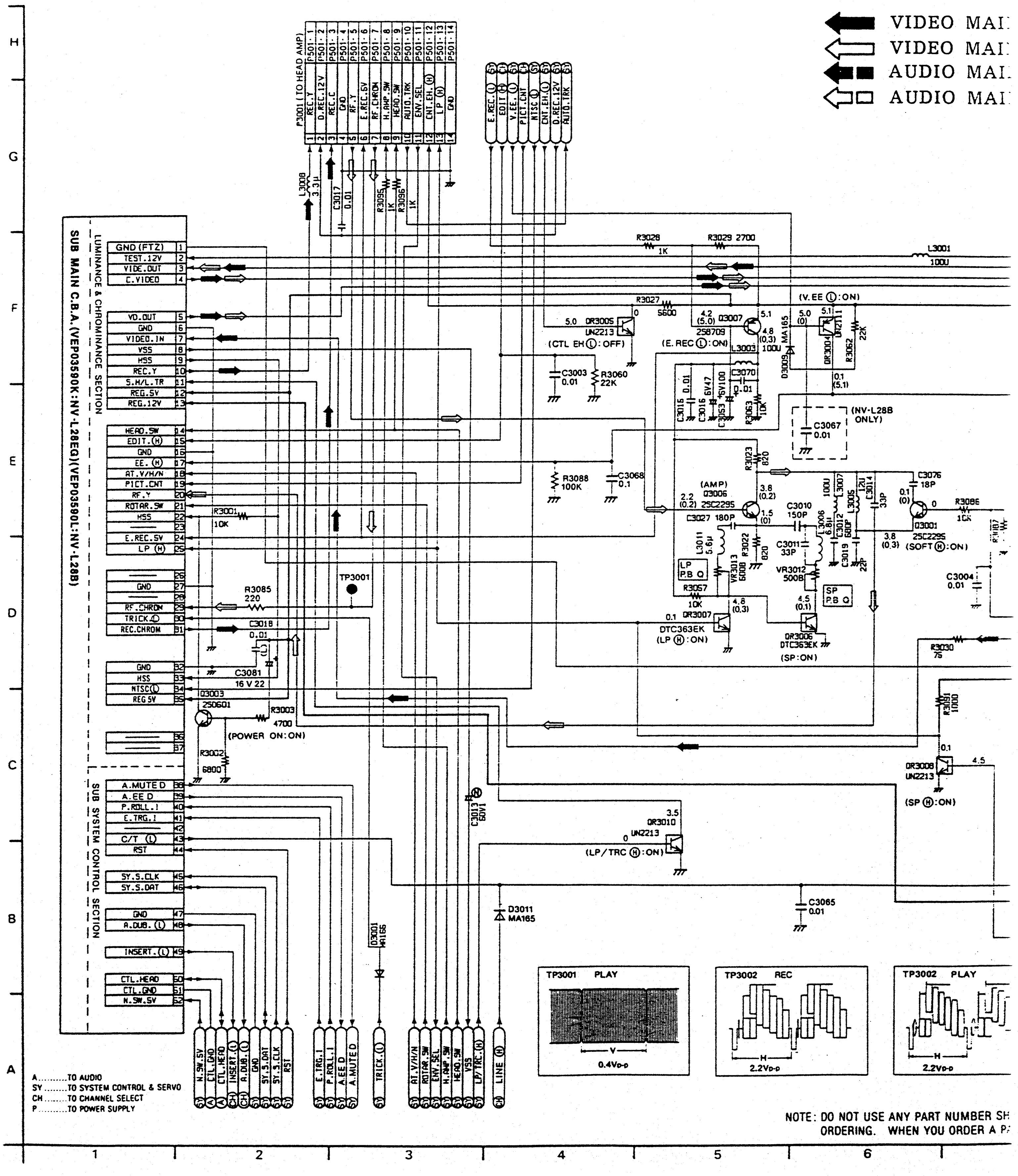

-18
C3814
6V100
5A
R3811
270
L3804
15μ
(NV-L28EG ONLY)
1 BG.PULSE
2 MESECM. Ⓗ
3 GND
4
5 REC.C
6 PB.C
7 SECAM EQ
8 E.REC.5V
9 REG.5V
4.5
0.4
0
0
2.8
0
0
4.9(0.3)
5.0
1 BG PULSE
2 SECAM Ⓗ
3 GND
4
5 REC CHROMA
6 PB CHROMA
7 SECAM EQ
8 EX REC Ⓗ
9 REG 5V
C851
0.01
R851
22K
R852
39
R853
150K
C852
16V33
R854
2200
IC851
BA7025L
(SECAM DETECTOR)
1.1
(0.3)
3.7
0
0
0
0.4
5.0
NC
COMP-1
COMP-2
SW
L/M
AMP
DET
REG
NC
3.6
(4.0)
4.6
0
(4.4)
3.1
3.5
3.5
0
5.0
C856
0.01
R856
10K
R855
1K
FL851
VLF0143
C854
0.056
C855
16V33
T851
ELM7Q207A
SECAM
KILLER
ADJ
C853
10V47
L851
100μ
(dB)
4.4
(MHz)
C858
680P
R858
5F0
0.4
47K
0.4
47K
QR853
DTC144EA
(SECAM Ⓗ ON)
DDR SECAM PACK C.B.A.
(VEP03452B: NV-L28EG)
21
22
23
24
25

ON THIS DIAGRAM IS RECORD MODE

THIS DIAGRAM IS PLAYBACK MODE

Next Page:
LUMI/CHRO & INPUT/OUTPUT Section

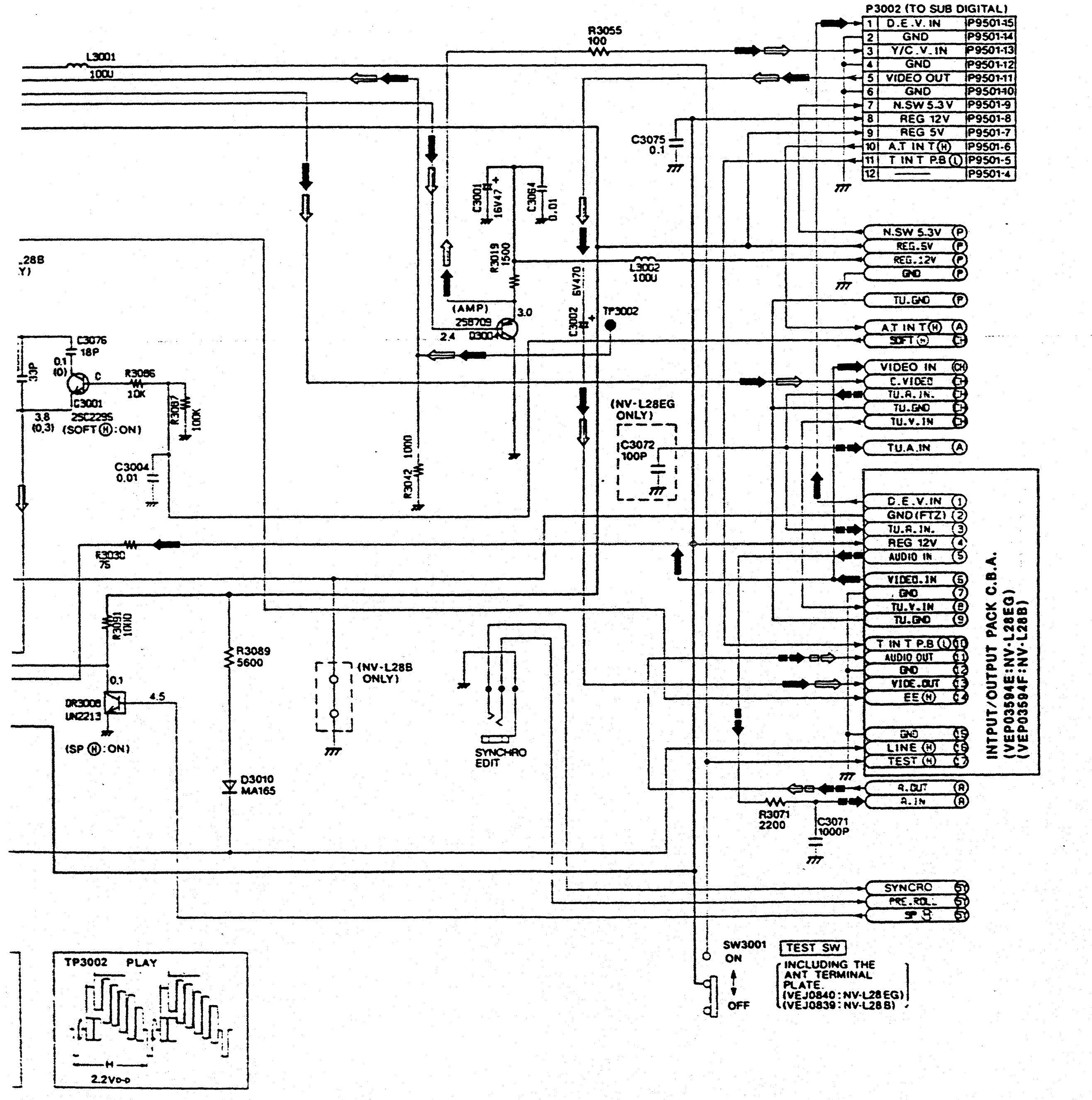
3-12. LUMINANCE & CHROMINANCE SCHEMATIC DIAGRAM


VIDEO MAI
VIDEO MAI
AUDIO MAI
AUDIO MAI
H
G
F
E
D
C
B
A
1
2
3
4
5
6
P3001 (TO HEAD AMP)
REC.Y
D.REC.12V
REC.C
GND
RF.Y
E.REC.5V
RF.CHROM
H.AMP.SW
HEAD.SW
AUTO.TRK
ENV.SEL
CNT.EH.(H)
LP (H)
GND
P501-1
P501-2
P501-3
P501-4
P501-5
P501-6
P501-7
P501-8
P501-9
P501-10
P501-11
P501-12
P501-13
P501-14
E.REC.(L)
EDIT (H)
V.EE.(L)
PICT.CNT
NTSC (L)
CNT.EH.(L)
D.REC.12V
AUTO.TRK
L3008
3.3μ
C3017
0.01
R3095
1K
R3096
1K
SUB MAIN C.B.A.(VEP03590K:NV-L28EG)(VEP03590L:NV-L28B)
LUMINANCE & CHROMINANCE SECTION
SUB SYSTEM CONTROL SECTION
GND (FTZ)
TEST.12V
VIDE.OUT
C.VIDEO
VD.OUT
GND
VIDEO.IN
VSS
HSS
REC.Y
S.H/L.TR
REG.5V
REG.12V
HEAD.SW
EDIT.(H)
GND
EE.(H)
AT.V/H/N
PICT.CNT
RF.Y
ROTAR.SW
HSS
E.REC.5V
LP (H)
GND
RF.CHROM
TRICK (L)
REC.CHROM
GND
HSS
NTSC (L)
REG 5V
A.MUTE D
A.EE D
P.ROLL.I
E.TRG.I
C/T (L)
RST
SY.S.CLK
SY.S.DAT
GND
A.DUB.(L)
INSERT.(L)
CTL.HEAD
CTL.GND
N.SW.5V
R3028
1K
R3029 2700
L3001
100U
R3027
5600
(V.EE (L):ON)
5.0 QR3005
UN2213
0
(CTL EH (L): OFF)
4.2
(5.0) Q3007
2SB709
(E.REC (L):ON)
5.1
4.8
(0.3)
L3003
100U
D3009
MA165
5.0
(0)
5.1
QR2111
QR3004
R3062
22K
0.1
(5.1)
C3003
0.01
R3060
22K
C3015 0.01
C3016 6V47
C3053 6V100
C3070 0.01
R3063 10K
(NV-L28B ONLY)
C3067
0.01
R3023
820
R3088
100K
C3068
0.1
(AMP)
Q3006
2SC2295
2.2
(0.2)
3.8
(0.2)
1.5
(0)
C3027 180P
C3010
150P
L3006
6.8μ
L3007
100U
L3005
12U
C3014
33P
C3012
680P
C3076
18P
0.1
(0)
0
R3086
10K
Q3001
2SC2295
3.8
(0.3)
(SOFT (H):ON)
L3011
5.6μ
R3022
820
C3011
33P
C3019
22P
VR3013
500B
VR3012
500B
LP
P.B Q
SP
P.B Q
R3057
10K
4.8
(0.3)
4.5
(0.1)
0.1 QR3007
DTC363EK
(LP (H):ON)
QR3006
DTC363EK
(SP:ON)
C3004
0.01
R3030
75
R3001
10K
TP3001
R3085
220
C3018
0.01
C3081
16 V 22
Q3003
2SD601
R3003
4700
(POWER ON:ON)
R3002
6800
R3091
1000
0.1
QR3008
UN2213
4.5
(SP (H):ON)
C3013
50V1
3.5
QR3010
UN2213
0
(LP/TRC (H):ON)
D3011
MA165
C3065
0.01
D3001
MA166
N.SW.5V
CTL.GND
CTL.HEAD
INSERT.(L)
A.DUB.(L)
GND
SY.S.DAT
SY.S.CLK
RST
E.TRG.I
P.ROLL.I
A.EE D
A.MUTE D
TRICK (L)
AT.V/H/N
ROTAR.SW
ENV.SEL
H.AMP.SW
HEAD.SW
VSS
LP/TRC.(H)
LINE (H)
TP3001 PLAY
V
0.4Vp-p
TP3002 REC
H
2.2Vp-p
TP3002 PLAY
H
2.2Vp-p

A..........TO AUDIO
SY..........TO SYSTEM CONTROL & SERVO
CH..........TO CHANNEL SELECT
P..........TO POWER SUPPLY

NOTE: DO NOT USE ANY PART NUMBER SH
ORDERING. WHEN YOU ORDER A PA

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE


P3002 (TO SUB DIGITAL)
1 D.E.V. IN P9501-15
2 GND P9501-14
3 Y/C.V. IN P9501-13
4 GND P9501-12
5 VIDEO OUT P9501-11
6 GND P9501-10
7 N.SW 5.3V P9501-9
8 REG 12V P9501-8
9 REG 5V P9501-7
10 A.T IN T Ⓗ P9501-6
11 T IN T P.B Ⓛ P9501-5
12 P9501-4
L3001 100U
R3055 100
C3075 0.1
C3001 16V47
C3064 0.01
R3019 1500
6V470
(AMP) 2SB709
Q3001
C3002
TP3002
L3002 100U
N.SW 5.3V Ⓟ
REG.5V Ⓟ
REG.12V Ⓟ
GND Ⓟ
TU.GND Ⓟ
A.T IN T Ⓗ Ⓐ
SOFT Ⓗ Ⓐ
VIDEO IN Ⓑ
C.VIDEO Ⓑ
TU.R.IN. Ⓑ
TU.GND Ⓑ
TU.V.IN Ⓑ
TU.A.IN Ⓐ
(NV-L28EG ONLY)
C3072 100P
C3076 18P
C3001
2SC2295
(SOFT Ⓗ : ON)
R3086 10K
R3087 10K
C3004 0.01
R3042 1000
R3030 75
R3001 1000
DR3006 UN2213
(SP Ⓗ : ON)
R3089 5600
(NV-L28B ONLY)
D3010 MA165
SYNCHRO EDIT
D.E.V.IN ①
GND(FTZ) ②
TU.R.IN. ③
REG 12V ④
AUDIO IN ⑤
VIDEO.IN ⑥
GND ⑦
TU.V.IN ⑧
TU.GND ⑨
T INT P.B Ⓛ ⑩
AUDIO OUT ⑪
GND ⑫
VIDE.OUT ⑬
EE Ⓗ ⑭
GND ⑮
LINE Ⓗ ⑯
TEST Ⓗ ⑰
INTPUT/OUTPUT PACK C.B.A.
(VEP03594E: NV-L28EG)
(VEP03594F: NV-L28B)
A.OUT Ⓡ
A.IN Ⓡ
R3071 2200
C3071 1000P
SYNCRO Ⓢ
PRE.ROL. Ⓢ
SP Ⓢ
SW3001 ON OFF
TEST SW
INCLUDING THE ANT TERMINAL PLATE
(VEJ0840: NV-L28EG)
(VEJ0839: NV-L28B)
TP3002 PLAY
H
2.2Vp-p
.28B

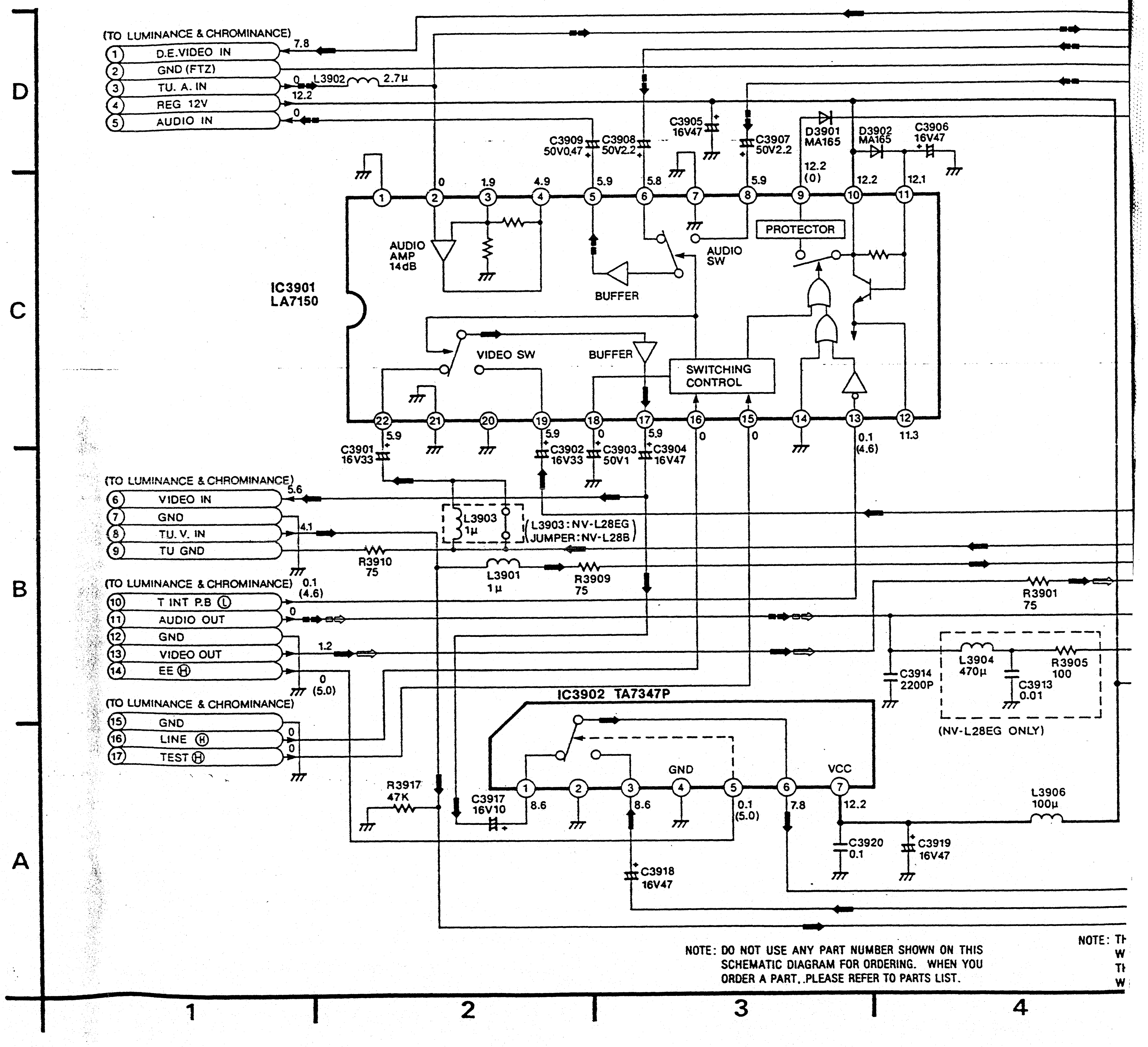
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
G. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

6 7 8 9 10 11

3-13. INPUT/OUTPUT PACK SCHEMATIC DIAGRAM

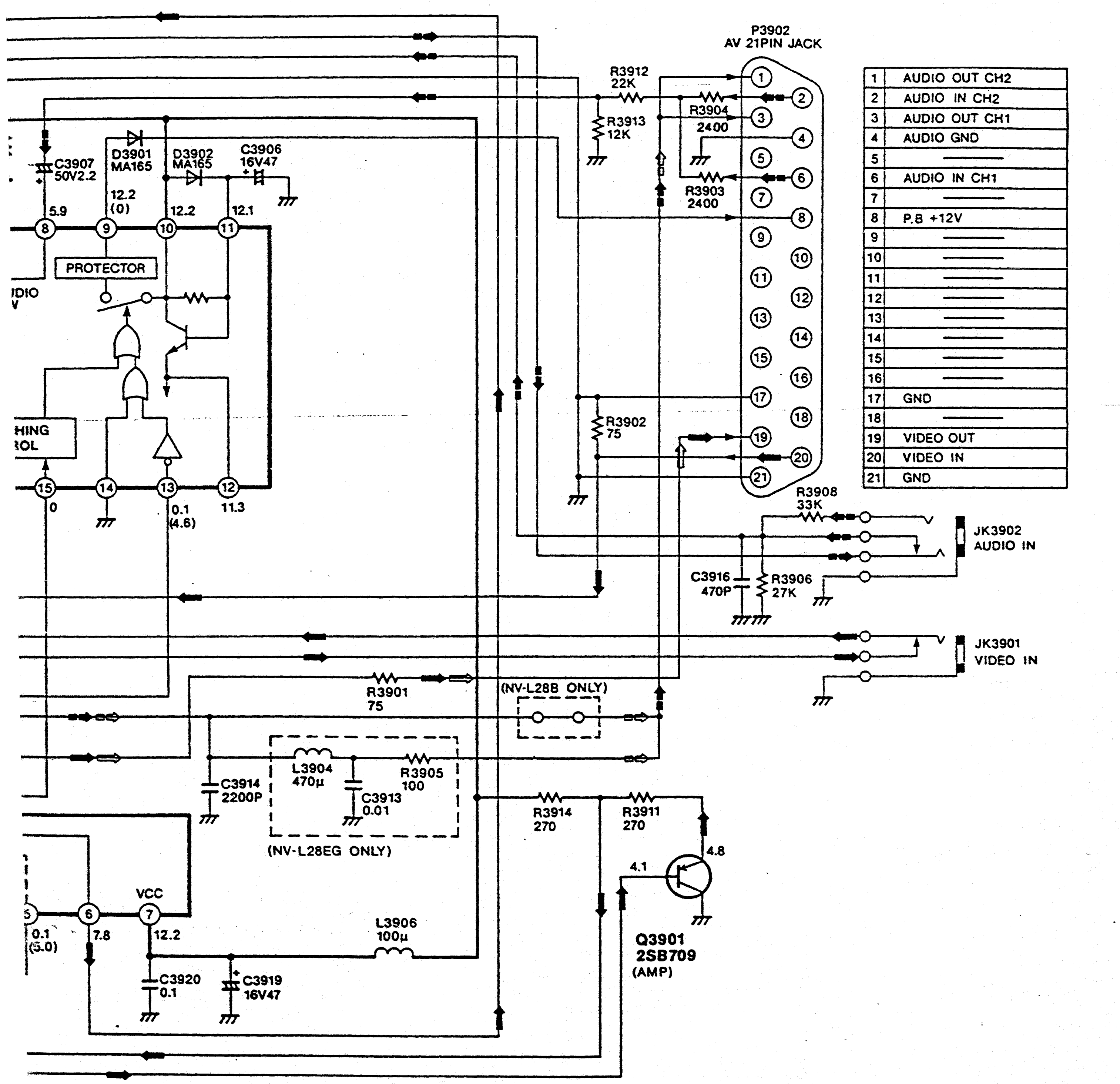
VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE


D
C
B
A
(TO LUMINANCE & CHROMINANCE)
① D.E.VIDEO IN
② GND (FTZ)
③ TU. A. IN
④ REG 12V
⑤ AUDIO IN
7.8
L3902 2.7µ
12.2
C3909 50V0.47
C3908 50V2.2
C3905 16V47
C3907 50V2.2
D3901 MA165
D3902 MA165
C3906 16V47
12.2 (0)
12.2
12.1
0 1.9 4.9 5.9 5.8 5.9
AUDIO AMP 14dB
AUDIO SW
PROTECTOR
BUFFER
IC3901 LA7150
VIDEO SW
BUFFER
SWITCHING CONTROL
C3901 16V33
5.9
C3902 16V33
C3903 50V1
C3904 16V47
0.1 (4.6)
11.3
(TO LUMINANCE & CHROMINANCE)
⑥ VIDEO IN
⑦ GND
⑧ TU. V. IN
⑨ TU GND
5.6
4.1
L3903 1µ
(L3903: NV-L28EG JUMPER: NV-L28B)
R3910 75
L3901 1µ
R3909 75
R3901 75
(TO LUMINANCE & CHROMINANCE)
0.1 (4.6)
⑩ T INT P.B Ⓛ
⑪ AUDIO OUT
⑫ GND
⑬ VIDEO OUT
⑭ EE Ⓗ
1.2
0 (5.0)
C3914 2200P
L3904 470µ
R3905 100
C3913 0.01
(NV-L28EG ONLY)
(TO LUMINANCE & CHROMINANCE)
⑮ GND
⑯ LINE Ⓗ
⑰ TEST Ⓗ
IC3902 TA7347P
GND
VCC
R3917 47K
C3917 16V10
8.6
8.6
0.1 (5.0)
7.8
12.2
C3918 16V47
C3920 0.1
C3919 16V47
L3906 100µ
1
2
3
4

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: TH
W
TH
W

ATH IN REC MODE
ATH IN PLAYBACK MODE
ATH IN REC MODE
ATH IN PLAYBACK MODE


P3902
AV 21PIN JACK
R3912
22K
R3913
12K
R3904
2400
R3903
2400
C3907
50V2.2
D3901
MA165
D3902
MA165
C3906
16V47
5.9
12.2
(0)
12.2
12.1
PROTECTOR
IDIO
HING
ROL
0
0.1
(4.6)
11.3
R3902
75
R3908
33K
JK3902
AUDIO IN
C3916
470P
R3906
27K
JK3901
VIDEO IN
R3901
75
(NV-L28B ONLY)
L3904
470μ
R3905
100
C3914
2200P
C3913
0.01
(NV-L28EG ONLY)
R3914
270
R3911
270
4.8
4.1
Q3901
2SB709
(AMP)
VCC
0.1
(5.0)
7.8
12.2
L3906
100μ
C3920
0.1
C3919
16V47

1	AUDIO OUT CH2
2	AUDIO IN CH2
3	AUDIO OUT CH1
4	AUDIO GND
5	———
6	AUDIO IN CH1
7	———
8	P.B +12V
9	———
10	———
11	———
12	———
13	———
14	———
15	———
16	———
17	GND
18	———
19	VIDEO OUT
20	VIDEO IN
21	GND

NOT USE ANY PART NUMBER SHOWN ON THIS HEMATIC DIAGRAM FOR ORDERING. WHEN YOU DER A PART, PLEASE REFER TO PARTS LIST.

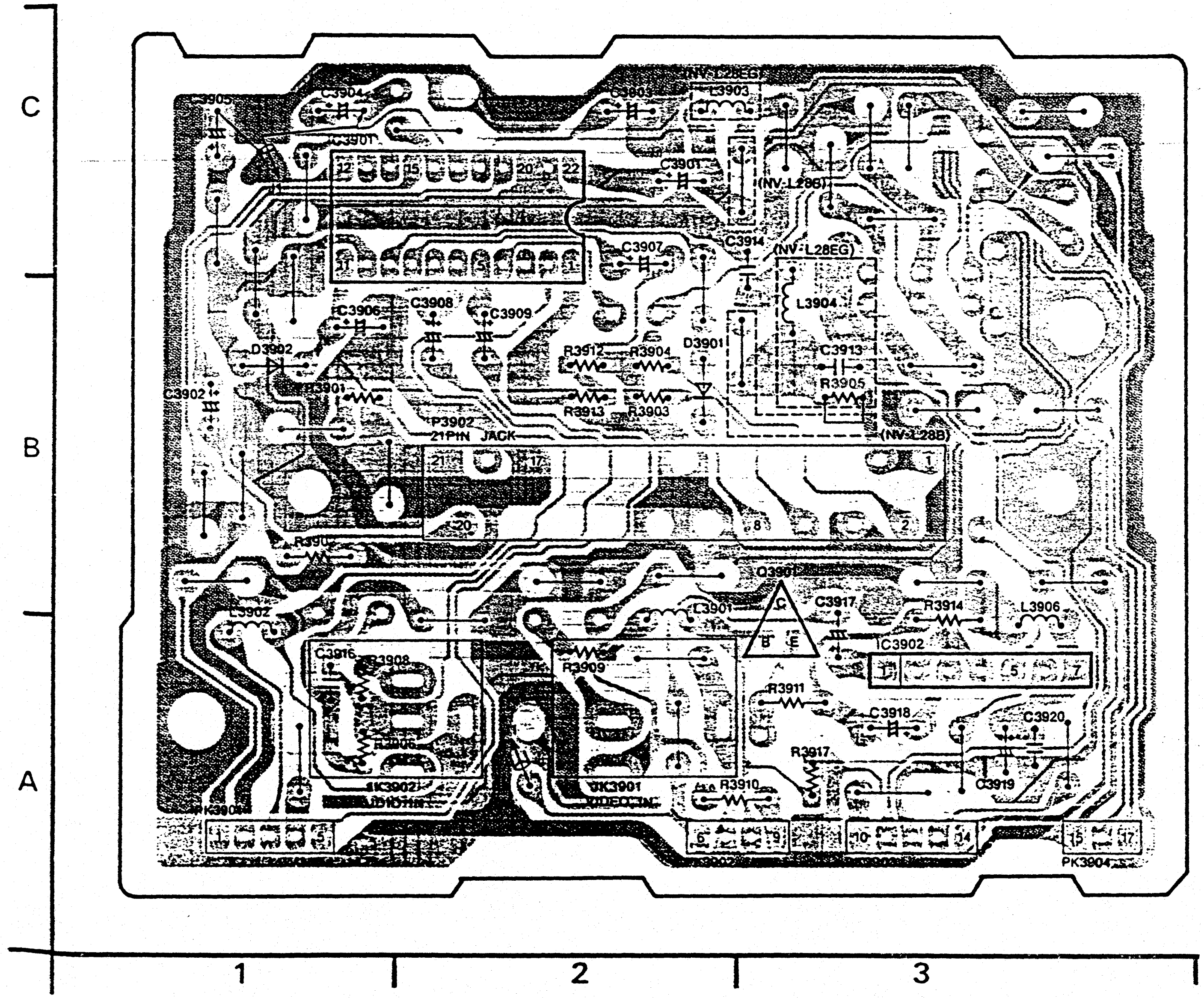
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (   ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

3 4 5 6

3-14. INPUT/OUTPUT PACK C.B.A. (VEP03594E: NV-L28EG) (VEP03594F: NV-L28B)

INPUT/OUTPUT PACK C.B.A.	
Integrated Circuit	
IC3901	C-1
IC3902	A-3
Transistor	
Q3901	A-3
Connector	
P3902	B-2
PK3901	A-1
PK3902	A-2
PK3903	A-3
PK3904	A-3

ADDRESS INFORMATION

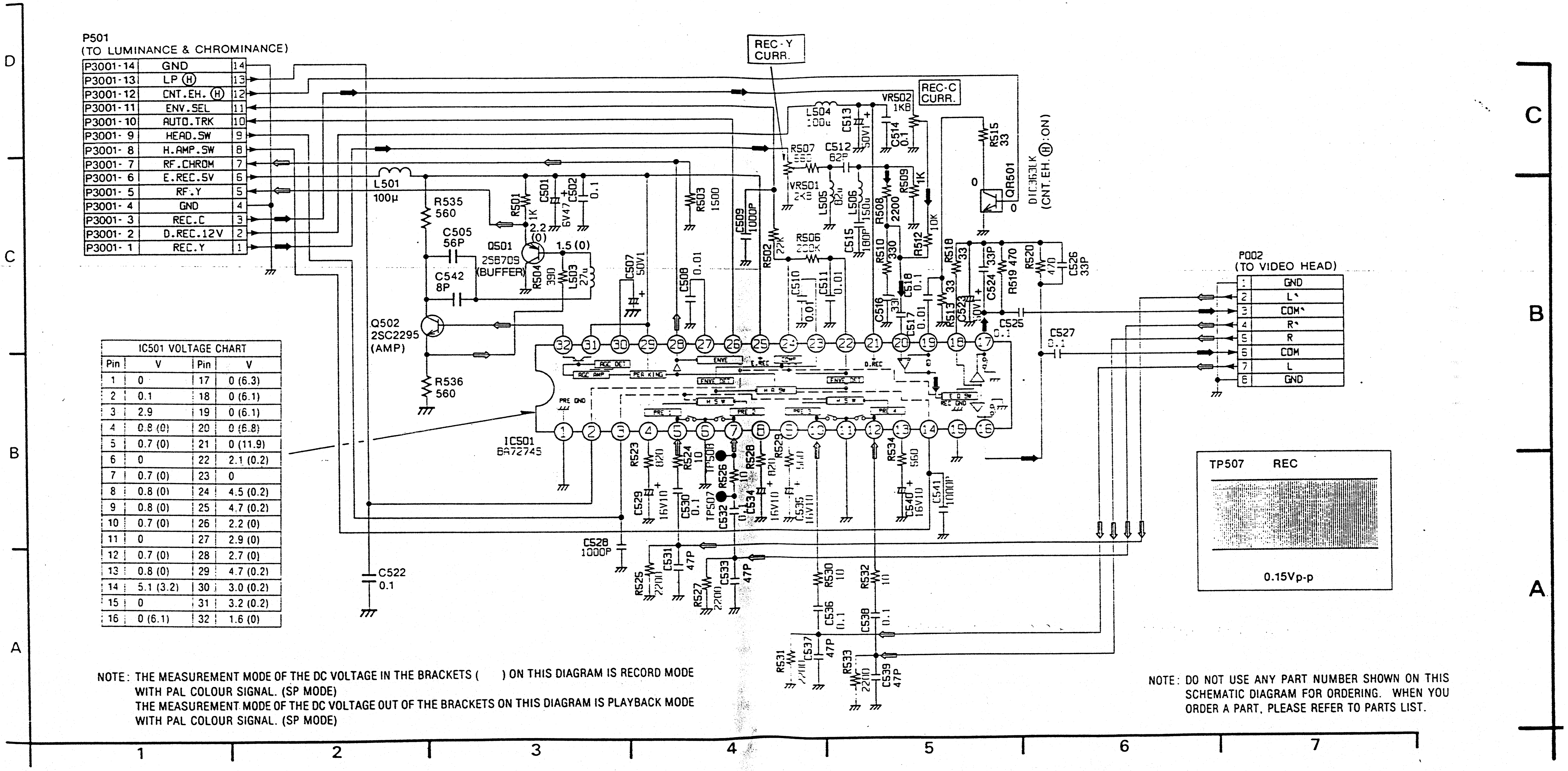

C
B
A
1
2
3
(NV-L28EG)
IC3901
C3901
(NV-L28B)
C3907
C3914
L3904
C3906
C3908
C3909
D3902
R3912
R3904
D3901
C3913
R3905
R3913
R3903
C3902
R3901
P3902
21PIN JACK
(NV-L28B)
Q3901
L3901
C3917
R3914
L3906
IC3902
C3916
R3908
R3909
R3911
C3918
C3920
R3917
R3910
C3919
JK3902
AUDIO IN
JK3901
VIDEO IN
PK3904

3-15. HEAD AMP SCHEMATIC DIAGRAM

3-16.

⬅ MAIN SIGNAL PATH IN REC MODE

⇦ MAIN SIGNAL PATH IN PLAYBACK MODE



P501
(TO LUMINANCE & CHROMINANCE)
P3001-14 GND 14
P3001-13 LP Ⓗ 13
P3001-12 CNT.EH. Ⓗ 12
P3001-11 ENV.SEL 11
P3001-10 AUTO.TRK 10
P3001-9 HEAD.SW 9
P3001-8 H.AMP.SW 8
P3001-7 RF.CHROM 7
P3001-6 E.REC.5V 6
P3001-5 RF.Y 5
P3001-4 GND 4
P3001-3 REC.C 3
P3001-2 D.REC.12V 2
P3001-1 REC.Y 1
REC-Y CURR.
REC-C CURR.
L501 100μ
R535 560
C505 56P
C542 8P
Q501 2SB709 (BUFFER)
Q502 2SC2295 (AMP)
R536 560
R501 1K
C501 6V47
C502 0.1
R504 390
L503 27μ
2.2 (0)
1.5 (0)
C507 50V1
C508 0.01
R503 1500
C509 1000P
R502 22K
L504 100μ
C513 50V1
VR502 1KB
C514 0.1
R507 560
C512 82P
VR501 2KB
L505
L506 150μ
R506 220K
C510 0.01
C511 0.01
C515 180P
R508 2200
R509 1K
R510 330
R512 10K
C516 33P
C518 0.1
C517 0.01
R513 33
R518 33
C523 50V1
C524 33P
R519 470
R520 470
C526 33P
C525 0.1
C527 0.1
R515 33
QR501 DTC363LK
(CNT.EH. Ⓗ:ON)
IC501 BA7274S
AGC DET
AGC AMP
PEAKING
ENVE
ENVE DET
E.REC
COMP
D.REC
H.S.W
PRE 1
PRE 2
PRE 3
PRE 4
PRE GND
REC GND
E.O.SW
R523 820
R524 10
TP508
R526 10
TP507
R528 10
R529 560
R534 560
C529 16V10
C530 0.1
C532
C534 16V10
C535 16V10
C540 16V10
C541 1000P
C522 0.1
C528 1000P
C531 47P
C533 47P
R525 2200
R527 2200
R530 10
R532 10
C536 0.1
C538 0.1
C537 47P
C539 47P
R531 2200
R533 2200
P002
(TO VIDEO HEAD)
1 GND
2 L'
3 COM'
4 R'
5 R
6 COM
7 L
8 GND
TP507 REC
0.15Vp-p
D
C
B
A
1
2
3
4
5
6
7

IC501 VOLTAGE CHART			
Pin	V	Pin	V
1	0	17	0 (6.3)
2	0.1	18	0 (6.1)
3	2.9	19	0 (6.1)
4	0.8 (0)	20	0 (6.8)
5	0.7 (0)	21	0 (11.9)
6	0	22	2.1 (0.2)
7	0.7 (0)	23	0
8	0.8 (0)	24	4.5 (0.2)
9	0.8 (0)	25	4.7 (0.2)
10	0.7 (0)	26	2.2 (0)
11	0	27	2.9 (0)
12	0.7 (0)	28	2.7 (0)
13	0.8 (0)	29	4.7 (0.2)
14	5.1 (3.2)	30	3.0 (0.2)
15	0	31	3.2 (0.2)
16	0 (6.1)	32	1.6 (0)

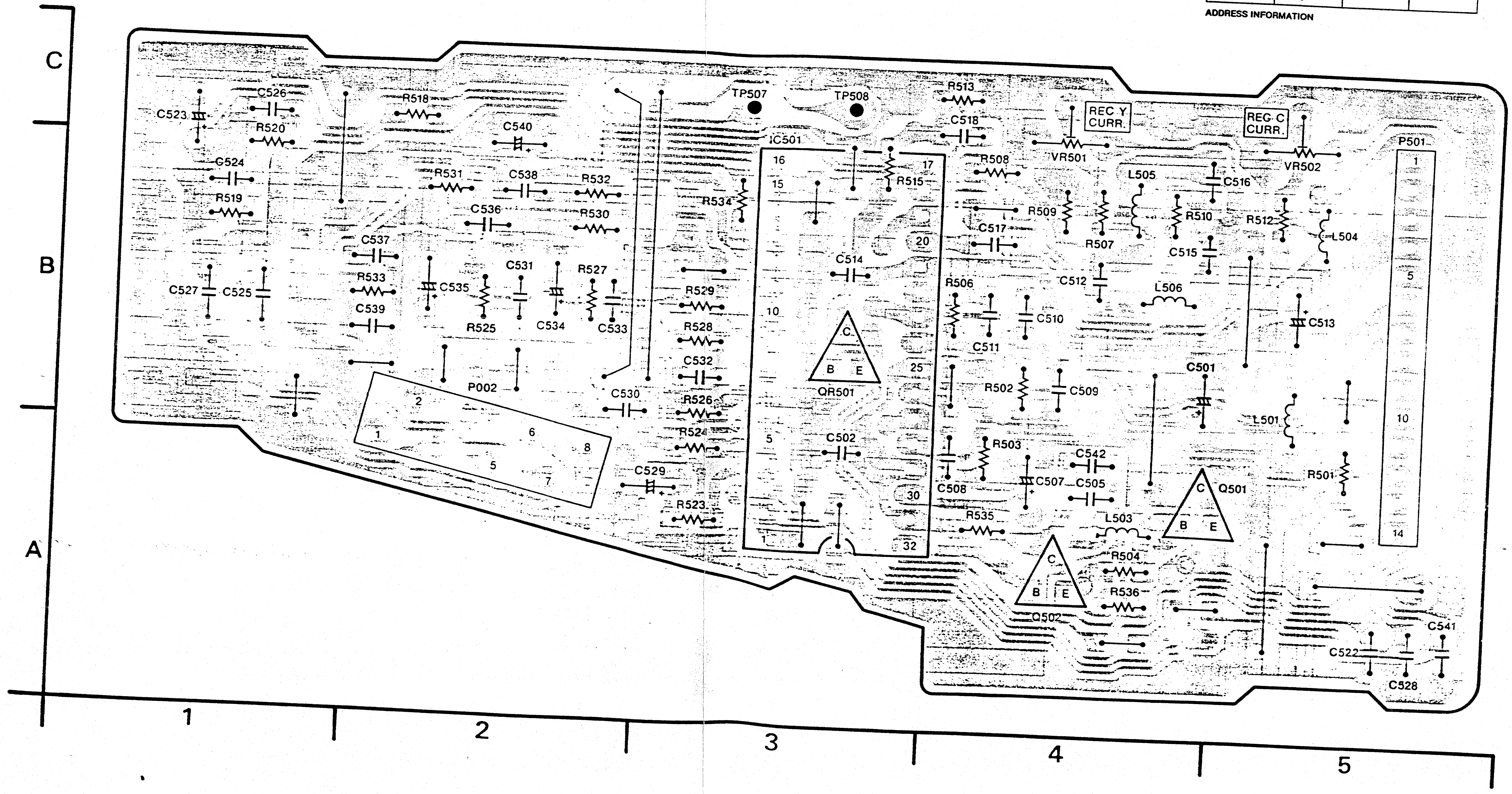
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (   ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-16. HEAD AMP C.B.A. (VEP05137A)

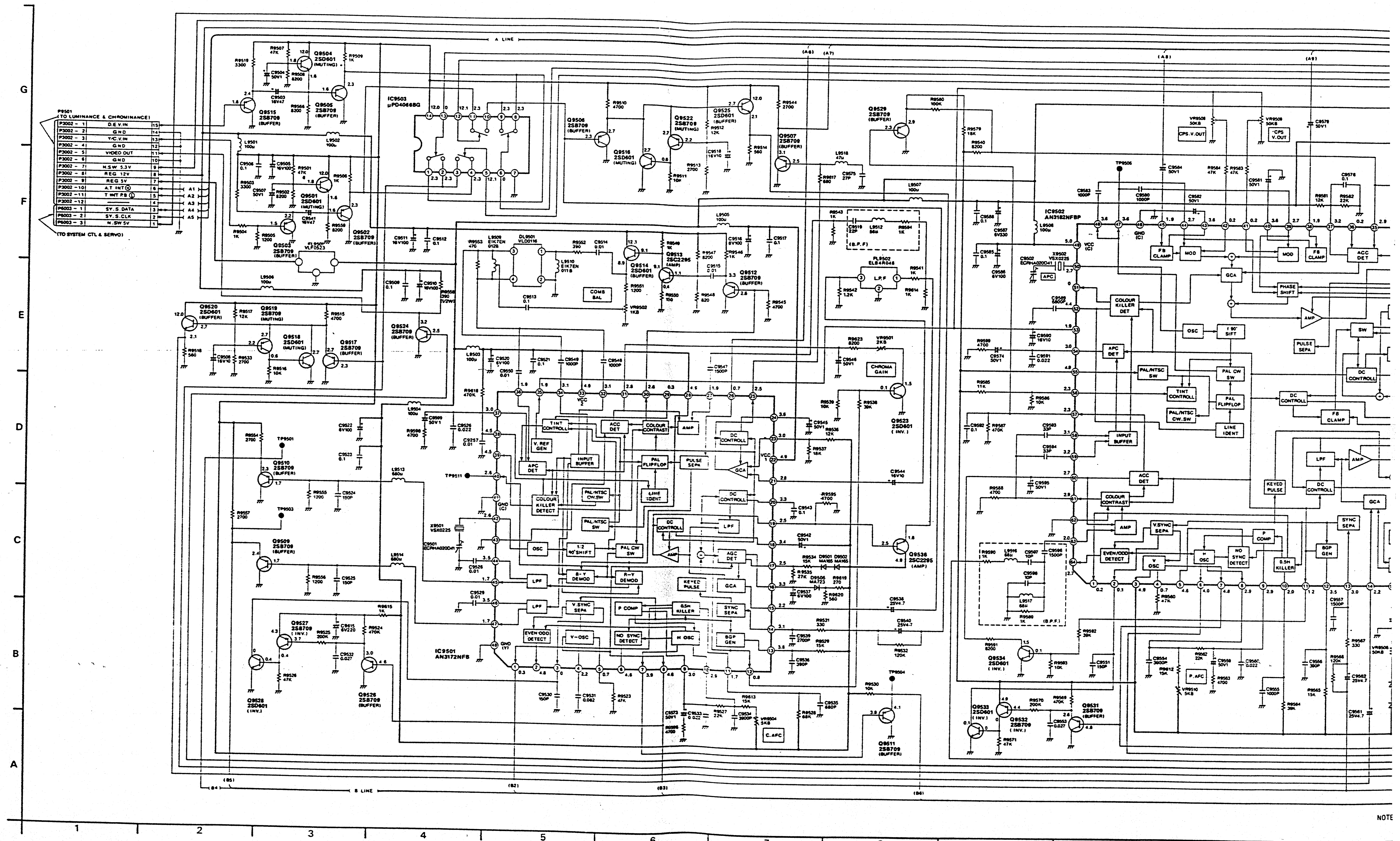
HEAD AMP C.B.A.			
Transistor		**Adjustment**	
Q501 Q502	A-5 A-4	VR501 VR502	C-4 C-5
Transistor & Resistor		**Connector**	
QR501	B-3	P001 P501	B-2 C-5
Integrated Circuit			
IC501	C-3		
Test Point			
TP507 TP508	C-3 C-3		

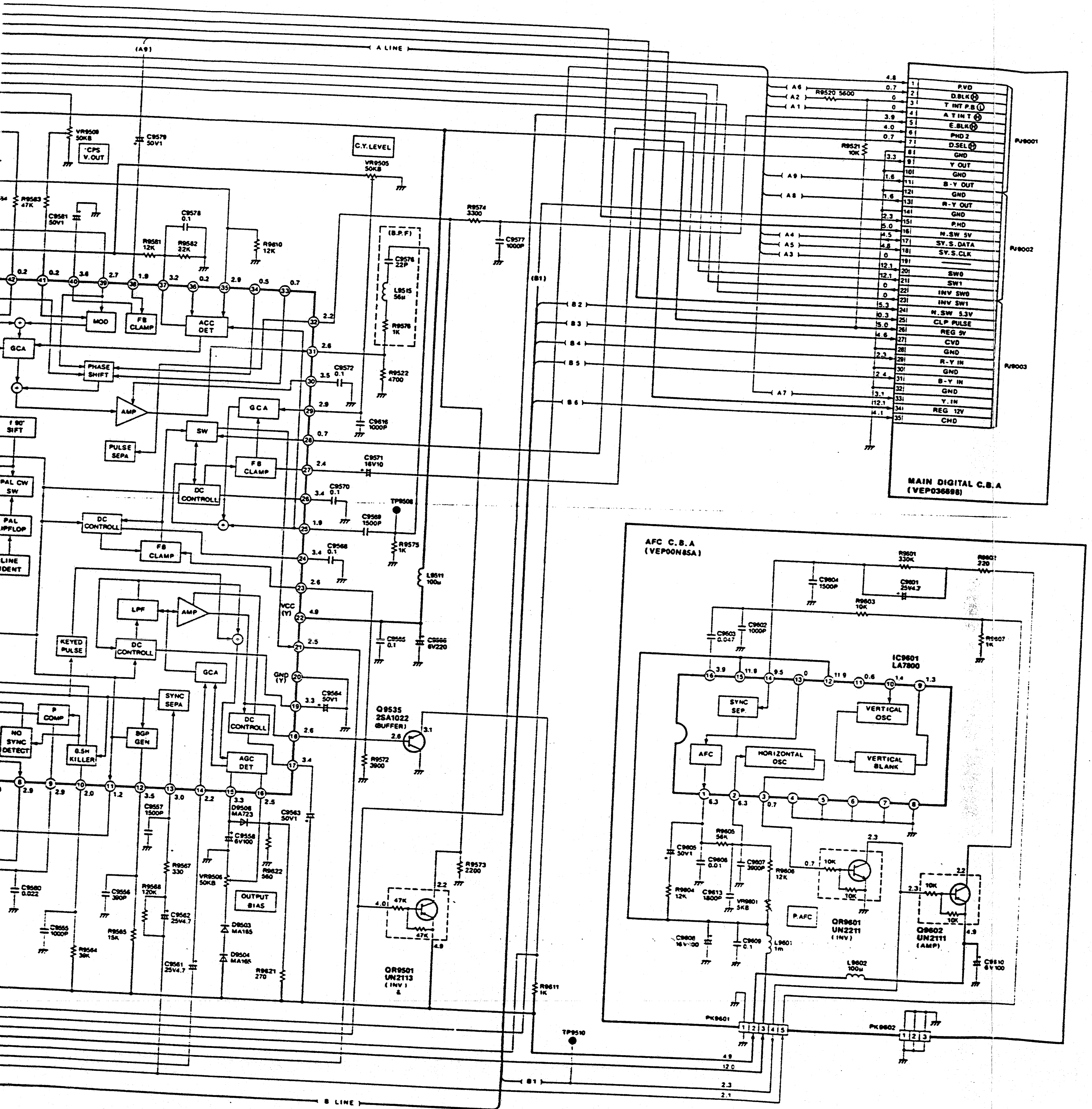
ADDRESS INFORMATION


C
B
A
1
2
3
4
5
C523
C526
R520
R518
C540
TP507
TP508
IC501
R513
C518
REC Y CURR.
REC C CURR.
VR501
VR502
P501
C524
R519
R531
C538
R532
C536
R530
R534
R515
R508
R509
R507
L505
R510
C516
R512
L504
C537
R533
C535
C531
R527
C514
C517
C515
C539
C527
C525
R525
C534
C533
R529
R528
R506
C511
C510
C512
L506
C513
C532
QR501
R502
C509
C501
P002
C530
R526
R524
R503
C508
C542
C507
C505
L501
R501
Q501
C502
C529
R523
R535
L503
R504
R536
Q502
C541
C522
C528
16
15
17
20
10
25
5
30
1
32
2
1
6
8
5
7
14

'N ON THIS
WHEN YOU
S LIST.

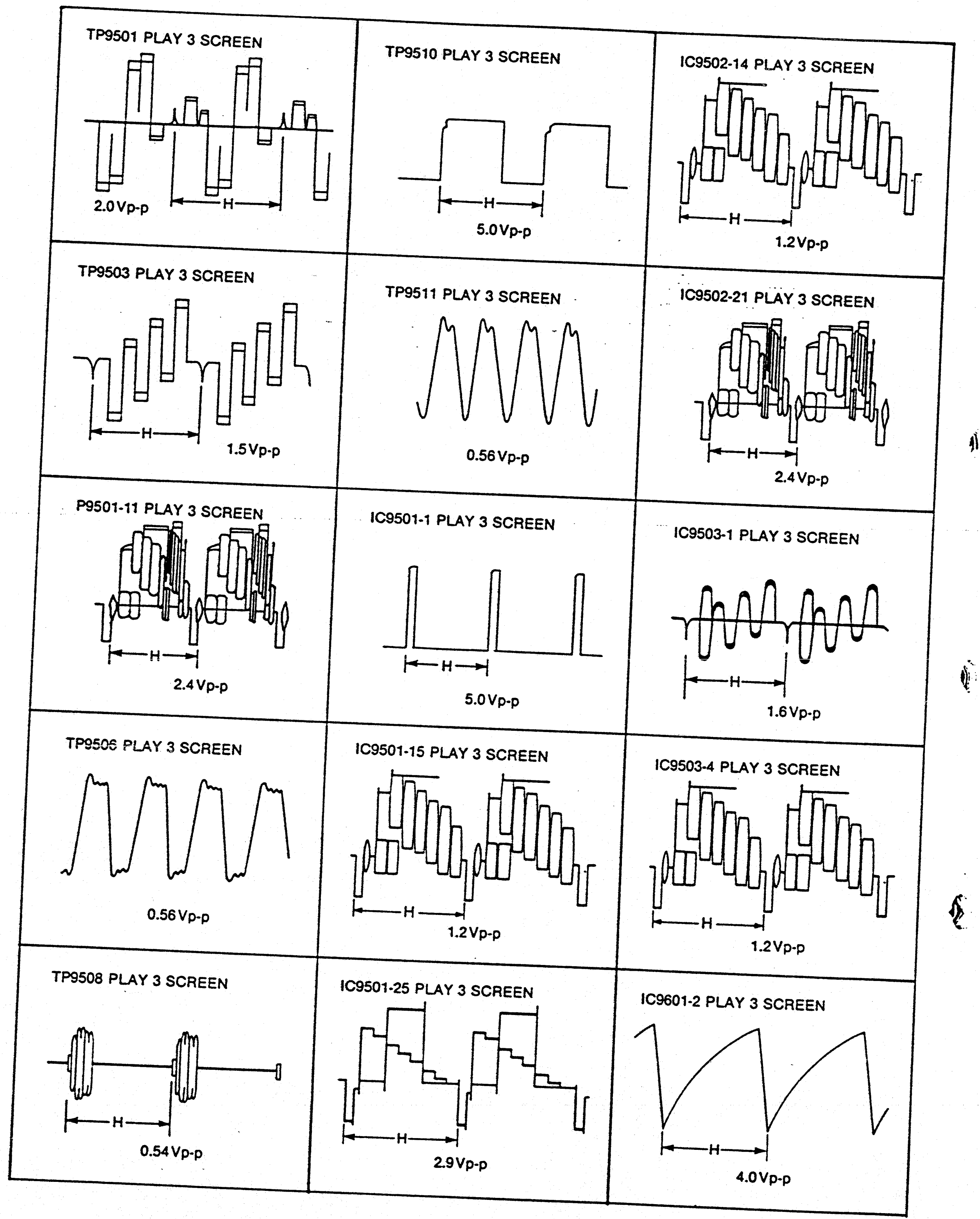
3-17. SUB DIGITAL SCHEMATIC DIAGRAM


G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
P9501
(TO LUMINANCE & CHROMINANCE)
P3002 - 1 D.E.V.IN 15
P3002 - 2 GND 14
P3002 - 3 Y/C.V.IN 13
P3002 - 4 GND 12
P3002 - 5 VIDEO OUT 11
P3002 - 6 GND 10
P3002 - 7 N.SW 5.3V 9
P3002 - 8 REG 12V 8
P3002 - 9 REG 5V 7
P3002 - 10 A.T INT Ⓗ 6
P3002 - 11 T INT P.B Ⓛ 5
P3002 - 12 4
P6003 - 1 SY.S.DATA 3
P6003 - 2 SY.S.CLK 2
P6003 - 3 N.SW 5V 1
(TO SYSTEM CTL & SERVO)
A1
A2
A3
A4
A5
A LINE
B LINE
(A6)
(A7)
(A8)
(A9)
(B1)
(B2)
(B3)
(B4)
(B5)
IC9503
μPD4066BG
Q9504 2SD601 (MUTING)
Q9505 2SB709 (BUFFER)
Q9515 2SB709 (BUFFER)
Q9501 2SD601 (MUTING)
Q9502 2SB709 (BUFFER)
Q9503 2SB709 (BUFFER)
Q9506 2SB709 (BUFFER)
Q9516 2SD601 (MUTING)
Q9522 2SB709 (MUTING)
Q9525 2SD601 (BUFFER)
Q9507 2SB709 (BUFFER)
Q9529 2SB709 (BUFFER)
Q9520 2SD601 (BUFFER)
Q9519 2SB709 (MUTING)
Q9518 2SD601 (MUTING)
Q9517 2SB709 (BUFFER)
Q9524 2SB709 (BUFFER)
Q9514 2SD601 (BUFFER)
Q9513 2SC2295 (AMP)
Q9512 2SB709 (BUFFER)
Q9523 2SD601 (INV.)
Q9510 2SB709 (BUFFER)
Q9509 2SB709 (BUFFER)
Q9536 2SC2295 (AMP)
Q9527 2SB709 (INV.)
Q9528 2SD601 (INV.)
Q9526 2SB709 (BUFFER)
Q9511 2SB709 (BUFFER)
Q9534 2SD601 (INV.)
Q9533 2SD601 (INV.)
Q9532 2SB709 (INV.)
Q9531 2SB709 (BUFFER)
DL9501 VLD0116
FL9502 ELB4R048
X9501 VSX0225
X9502 VSX0225
IC9501 AN3172NFB
IC9502 AN3182NFBP
TP9501
TP9503
TP9504
TP9506
TP9511
COMB BAL
CHROMA GAIN
C.AFC
CPS.V.OUT
CPS V.OUT
L.P.F
(B.P.F)
APC
TINT CONTROLL
ACC DET
COLOUR CONTRAST
AMP
V. REF GEN
APC DET
INPUT BUFFER
PAL FLIPFLOP
PULSE SEPA
DC CONTROLL
GCA
COLOUR KILLER DETECT
PAL/NTSC CW.SW
LINE IDENT
PAL/NTSC SW
LPF
OSC
1:2 90°SHIFT
PAL CW SW
AGC DET
B-Y DEMOD
R-Y DEMOD
KEYED PULSE
V.SYNC SEPA
P COMP
0.5H KILLER
SYNC SEPA
EVEN/ODD DETECT
V-OSC
NO SYNC DETECT
H OSC
BGP GEN
FB CLAMP
MOD
ACC DET
PHASE SHIFT
COLOUR KILLER DET
f 90° SIFT
PULSE SEPA
SW
DC CONTROLL
PAL CW SW
TINT CONTROLL
PAL FLIPFLOP
PAL/NTSC CW.SW
FB CLAMP
INPUT BUFFER
KEYED PULSE
COLOUR CONTRAST
V.SYNC SEPA
P COMP
EVEN/ODD DETECT
V OSC
H OSC
NO SYNC DETECT
0.5H KILLER
BGP GEN
SYNC SEPA
P. AFC
NOTE

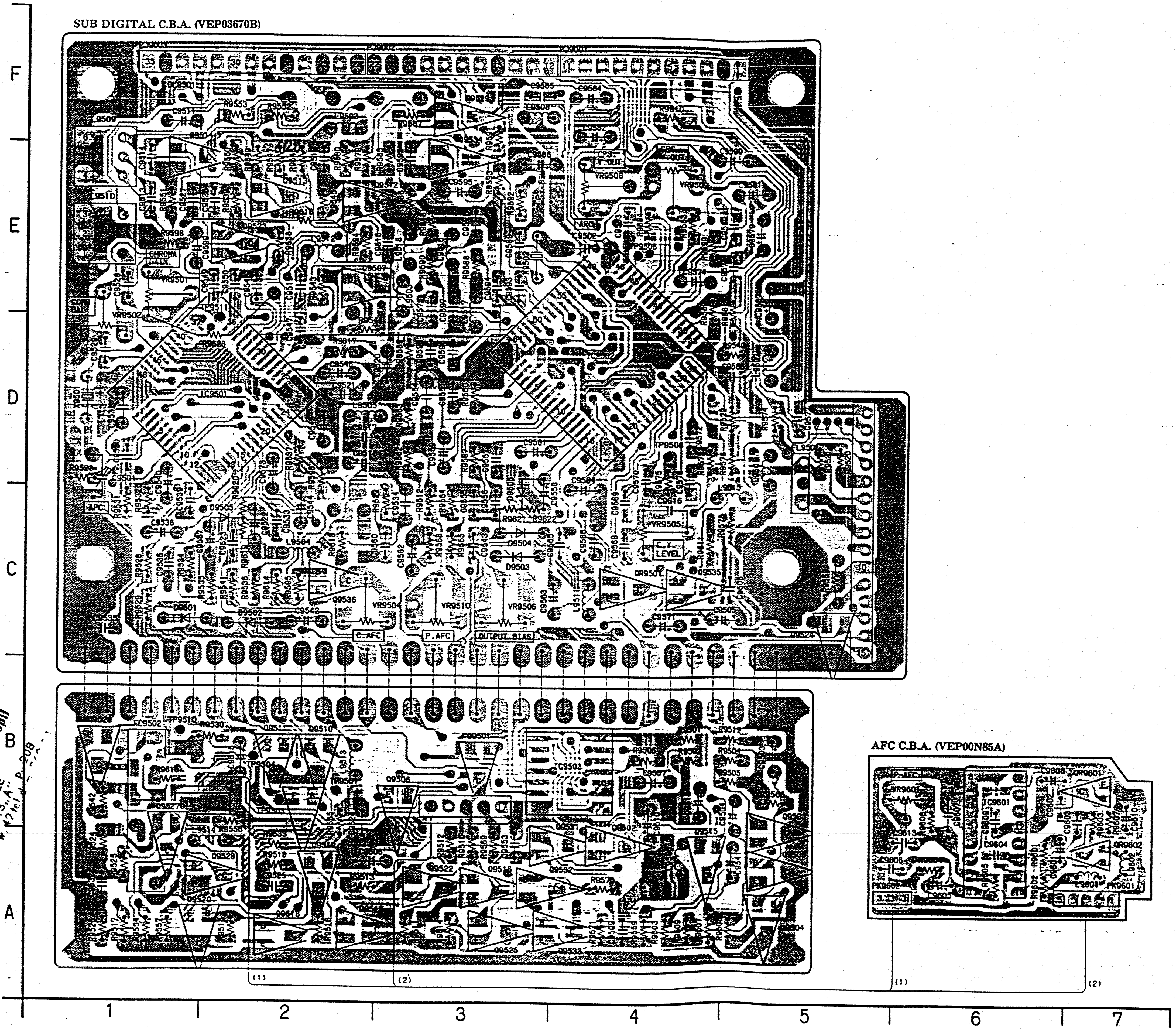

A LINE
(A9)
B LINE
(B1)
A6
A2
A1
A9
A8
A4
A5
A3
A7
B2
B3
B4
B5
B6
B1
R9520 5600
R9521 10K
4.8
0.7
0
0
3.9
4.0
0.7
3.3
1.6
1.6
2.3
5.0
4.5
4.8
0
12.1
12.1
0
0
5.3
0.3
5.0
4.6
2.3
2.4
3.1
12.1
4.1
1 P.VD
2 D.BLK Ⓗ
3 T INT P.B Ⓛ
4 A T IN T Ⓗ
5 E.BLK Ⓗ
6 PHD 2
7 D.SEL Ⓗ
8 GND
9 Y OUT
10 GND
11 B-Y OUT
12 GND
13 R-Y OUT
14 GND
15 P.HD
16 N.SW 5V
17 SY.S.DATA
18 SY.S.CLK
19
20 SW0
21 SW1
22 INV SW0
23 INV SW1
24 N.SW 5.3V
25 CLP PULSE
26 REG 5V
27 CVD
28 GND
29 R-Y IN
30 GND
31 B-Y IN
32 GND
33 Y.IN
34 REG 12V
35 CHD
PJ9001
PJ9002
PJ9003
MAIN DIGITAL C.B.A
(VEP036698)
VR9508 50KB
C9579 50V1
CPS V.OUT
C.Y.LEVEL
VR9505 50KB
R9563 47K
C9581 50V1
C9578 0.1
R9581 12K
R9582 22K
R9610 12K
R9574 3300
C9577 1000P
(B.P.F)
C9576 22P
L9515 56u
R9576 1K
R9522 4700
C9572 0.1
C9616 1000P
C9571 16V10
C9570 0.1
TP9508
C9569 1500P
R9575 1K
C9568 0.1
L9511 100u
C9565 0.1
C9566 6V220
C9564 50V1
Q9535
2SA1022
(BUFFER)
R9572 3900
MOD
FB CLAMP
ACC DET
GCA
PHASE SHIFT
AMP
PULSE SEPA
SW
GCA
FB CLAMP
DC CONTROLL
DC CONTROLL
FB CLAMP
PAL CW SW
PAL FLIPFLOP
LINE IDENT
1 90° SIFT
LPF
AMP
KEYED PULSE
DC CONTROLL
GCA
SYNC SEPA
P COMP
NO SYNC DETECT
0.5H KILLER
BGP GEN
DC CONTROLL
AGC DET
OUTPUT BIAS
VCC (Y)
GND (Y)
C9557 1500P
C9563 50V1
D9506 MA723
C9558 6V100
R9567 330
VR9506 50KB
R9622 560
C9560 0.022
C9556 390P
R9566 120K
C9562 25V4.7
D9503 MA165
D9504 MA165
R9621 270
C9555 1000P
R9564 39K
R9565 15K
C9561 25V4.7
QR9501
UN2113
(INV)
47K
47K
R9573 2200
R9611 1K
TP9510
AFC C.B.A
(VEP00N85A)
R9601 330K
R9602 220
C9604 1500P
C9601 25V4.7
R9603 10K
C9603 0.047
C9602 1000P
R9607 1K
IC9601
LA7800
SYNC SEP
VERTICAL OSC
AFC
HORIZONTAL OSC
VERTICAL BLANK
R9605 56K
C9605 50V1
C9606 0.01
C9607 3900P
R9606 12K
R9604 12K
C9613 1800P
VR9601 3KB
P.AFC
QR9601
UN2211
(INV)
Q9602
UN2111
(AMP)
C9608 16V100
C9609 0.1
L9601 1m
L9602 100u
C9610 6V100
PK9601
PK9602
4.9
12.0
2.3
2.1
12
13
14
15
16
17
18

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS 3-SCREEN MODE WITH PAL COLOUR SIGNAL.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.



3-18. SUB DIGITAL C.B.A. (VEP03670B)

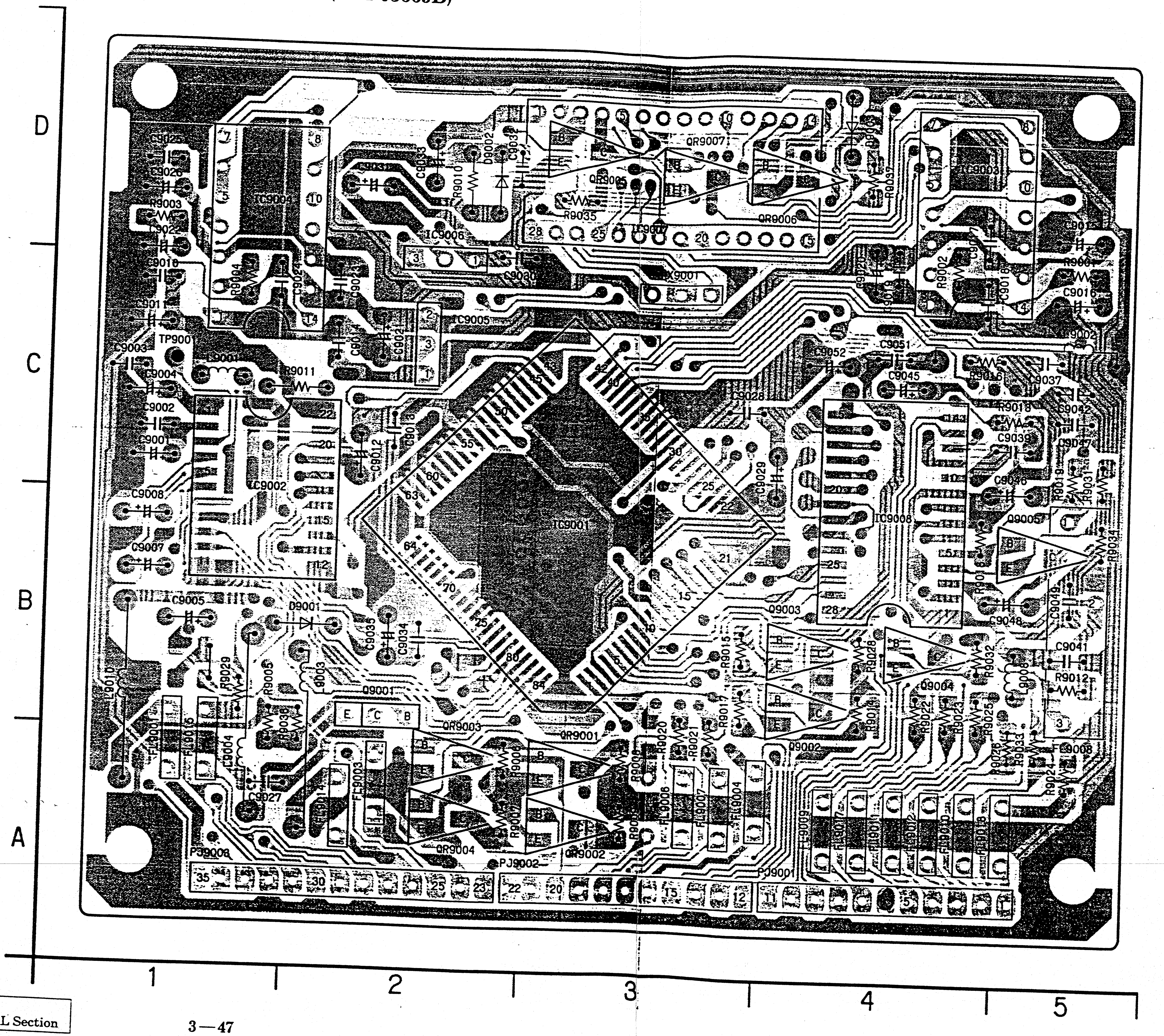

SUB DIGITAL C.B.A. (VEP03670B)
AFC C.B.A. (VEP00N85A)
F
E
D
C
B
A
1
2
3
4
5
6
7
(1)
(2)
APC
C-AFC
P.AFC
OUTPUT BIAS
CHROMA GAIN
Y OUT
C-Y LEVEL
P-AFC

SUB DIGITAL C.B.A.	
Transistor	
Q9501	B-3
Q9502	B-4
Q9503	B-5
Q9504	A-5
Q9505	A-5
Q9506	B-3
Q9507	E-2
Q9509	B-2
Q9510	B-2
Q9511	B-2
Q9512	E-3
Q9513	E-2
Q9514	F-1
Q9515	B-4
Q9516	A-3
Q9517	A-2
Q9518	A-2
Q9519	A-2
Q9520	A-1
Q9522	A-3
Q9523	E-2
Q9524	C-5
Q9525	A-3
Q9526	B-1
Q9527	B-1
Q9529	F-3
Q9531	B-4
Q9532	A-4
Q9533	A-4
Q9534	F-3
Q9535	C-4
Q9536	C-2
Transistor & Resistor	
QR9501	C-4
QR9601	B-7
QR9602	A-7
Integrated Circuit	
IC9501	D-2
IC9502	D-4
IC9503	B-4
IC9601	B-6
Test Point	
TP9501	B-2
TP9503	B-2
TP9504	B-2
TP9506	E-4
TP9508	D-4
TP9510	B-1
TP9511	E-2
Adjustment	
VR9501	E-1
VR9502	D-1
VR9504	C-3
VR9505	C-4
VR9506	C-3
VR9508	E-4
VR9509	E-4
VR9510	C-3
VR9601	B-6
C9501	D-5
C9502	E-4
Connector	
P9501	D-5
PJ9001	F-4
PJ9002	F-3
PJ9003	F-1
PK9001	A-7
PK9002	A-5

ADDRESS INFORMATION

„SCHEMATIC"
Skup i Sprzedaż Schematów RTV
oraz usługi w zakresie kserokopii
Andrzej Janik
45-716 OPOLE
ul. Spychalskiego 13 „A" p. 208
tel. 742-437 do 9 w. 42 tel. d.

3-19. MAIN DIGITAL C.B.A. (VEP03669B)

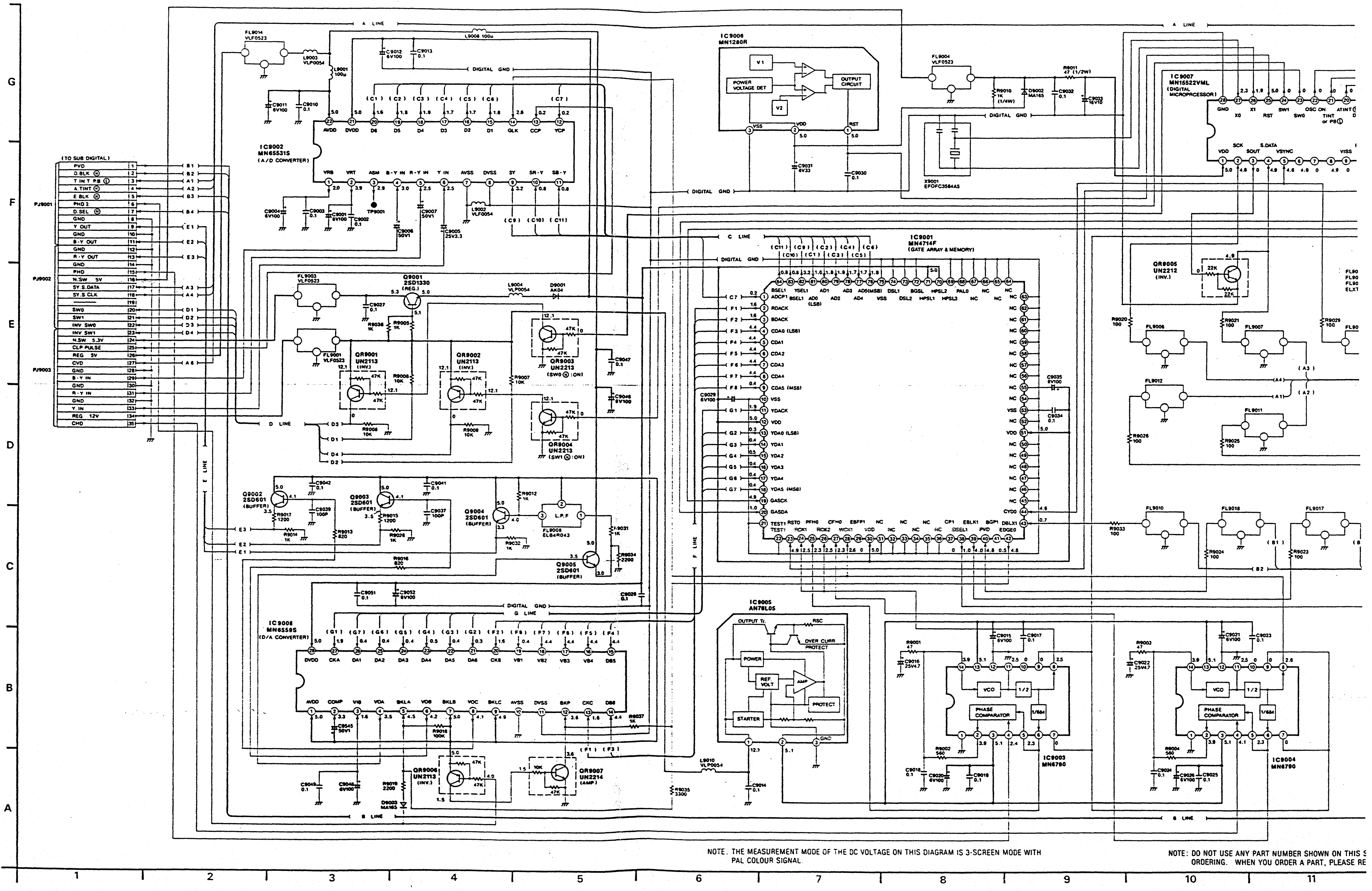

D
C
B
A
1
2
3
4
5
IC9001
IC9002
IC9003
IC9004
IC9005
IC9006
IC9007
IC9008
QR9001
QR9002
QR9003
QR9004
QR9005
QR9006
QR9007
Q9001
Q9002
Q9003
Q9004
Q9005
TP9001
PJ9001
PJ9002
PJ9003
X9001
D9001
D9002
L9001
L9003
L9006
FL9001
FL9002
FL9003
FL9004
FL9005
FL9006
FL9007
FL9008
FL9009
FL9010
FL9011
FL9012
FL9013
FL9015
FL9016
FL9017
C9001
C9002
C9003
C9004
C9005
C9007
C9008
C9010
C9011
C9012
C9013
C9016
C9018
C9020
C9021
C9025
C9026
C9027
C9028
C9029
C9030
C9031
C9033
C9034
C9035
C9037
C9039
C9041
C9042
C9045
C9046
C9047
C9048
C9049
C9051
C9052
R9001
R9002
R9003
R9004
R9005
R9006
R9007
R9008
R9009
R9010
R9011
R9012
R9015
R9016
R9017
R9018
R9019
R9020
R9021
R9022
R9023
R9025
R9026
R9027
R9028
R9029
R9030
R9031
R9032
R9033
R9034
R9035
R9037
E
C
B

MAIN DIGITAL C.B.A.	
Transistor	
Q9001	B-2
Q9002	A-4
Q9003	B-4
Q9004	B-4
Q9005	B-5
Transistor & Resistor	
QR9001	A-3
QR9002	A-3
QR9003	B-2
QR9004	A-2
QR9005	D-3
QR9006	D-4
QR9007	D-3
Integrated Circuit	
IC9001	B-3
IC9002	C-1
IC9003	D-4
IC9004	D-1
IC9005	C-2
IC9006	D-2
IC9007	D-3
IC9008	B-4
Test Point	
TP9001	C-1
Connector	
PJ9001	A-4
PJ9002	A-2
PJ9003	A-1

ADDRESS INFORMATION

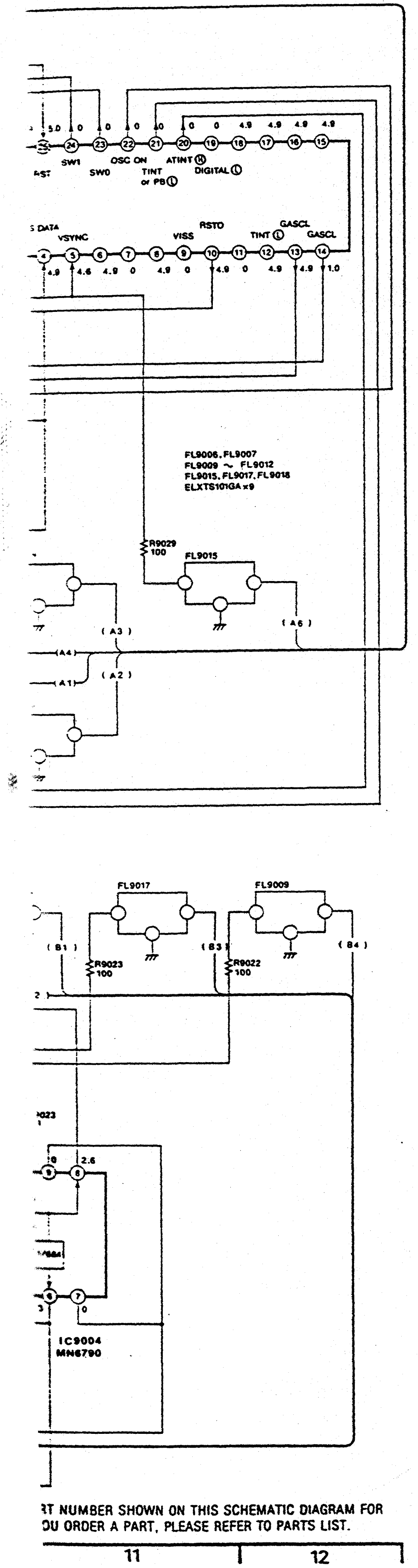
Back Page:
SUB DIGITAL Section

3-20. MAIN DIGITAL SCHEMATIC DIAGRAM


IC9002 MN65531S (A/D CONVERTER)
IC9006 MN1280R
IC9007 MN15522VML (DIGITAL MICROPROCESSOR)
IC9001 MN4714F (GATE ARRAY & MEMORY)
IC9008 MN6559S (D/A CONVERTER)
IC9005 AN78L05
IC9003 MN6790
IC9004 MN6790
Q9001 2SD1330 (REG.)
QR9001 UN2113 (INV.)
QR9002 UN2113 (INV.)
QR9003 UN2213 (SW0 Ⓗ : ON)
QR9004 UN2213 (SW1 Ⓗ : ON)
Q9002 2SD601 (BUFFER)
Q9003 2SD601 (BUFFER)
Q9004 2SD601 (BUFFER)
Q9005 2SD601 (BUFFER)
QR9005 UN2212 (INV.)
QR9006 UN2113 (INV.)
QR9007 UN2214 (AMP)
X9001 EFOFC3584A5
PJ9001
PJ9002
PJ9003
(TO SUB DIGITAL)
A LINE
B LINE
C LINE
D LINE
E LINE
F LINE
G LINE
DIGITAL GND
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

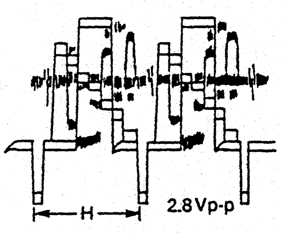
NOTE. THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS 3-SCREEN MODE WITH PAL COLOUR SIGNAL.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS S ORDERING. WHEN YOU ORDER A PART, PLEASE RE

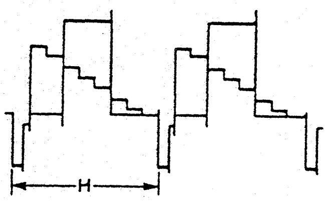

SW1
SW0
OSC ON
TINT or PB Ⓛ
ATINT Ⓗ
DIGITAL Ⓛ
DATA
VSYNC
VISS
RSTO
TINT Ⓛ
GASCL
GASCL
FL9006, FL9007
FL9009 ~ FL9012
FL9015, FL9017, FL9018
ELXTS101GA×9
R9029 100
FL9015
(A3)
(A6)
(A4)
(A1)
(A2)
FL9017
FL9009
(B1)
(B3)
(B4)
R9023 100
R9022 100
IC9004
MN6790
11
12

ꓤT NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ƆU ORDER A PART, PLEASE REFER TO PARTS LIST.

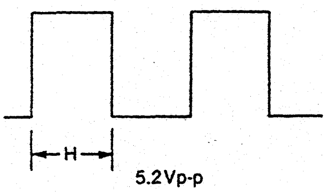
TP9001 PLAY 3 SCREEN



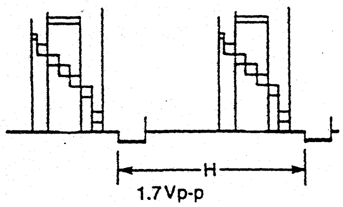
IC9002-6 PLAY 3 SCREEN



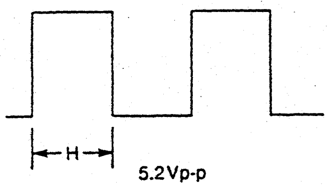
IC9001-25 PLAY 3 SCREEN



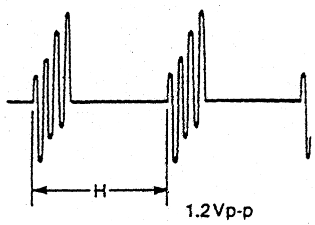
IC9008-4 PLAY 3 SCREEN



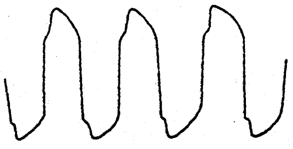
IC9001-27 PLAY 3 SCREEN



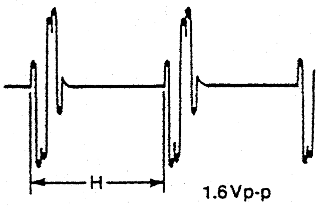
IC9008-6 PLAY 3 SCREEN



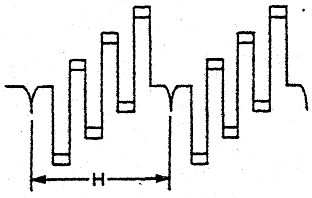
IC9001-28 PLAY 3 SCREEN



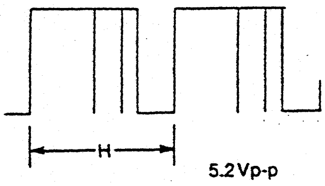
IC9008-8 PLAY 3 SCREEN



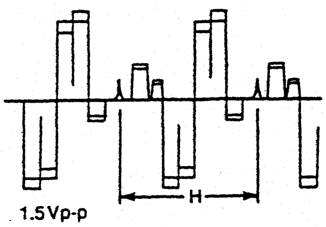
IC9002-4 PLAY 3 SCREEN



IC9008-12 PLAY 3 SCREEN

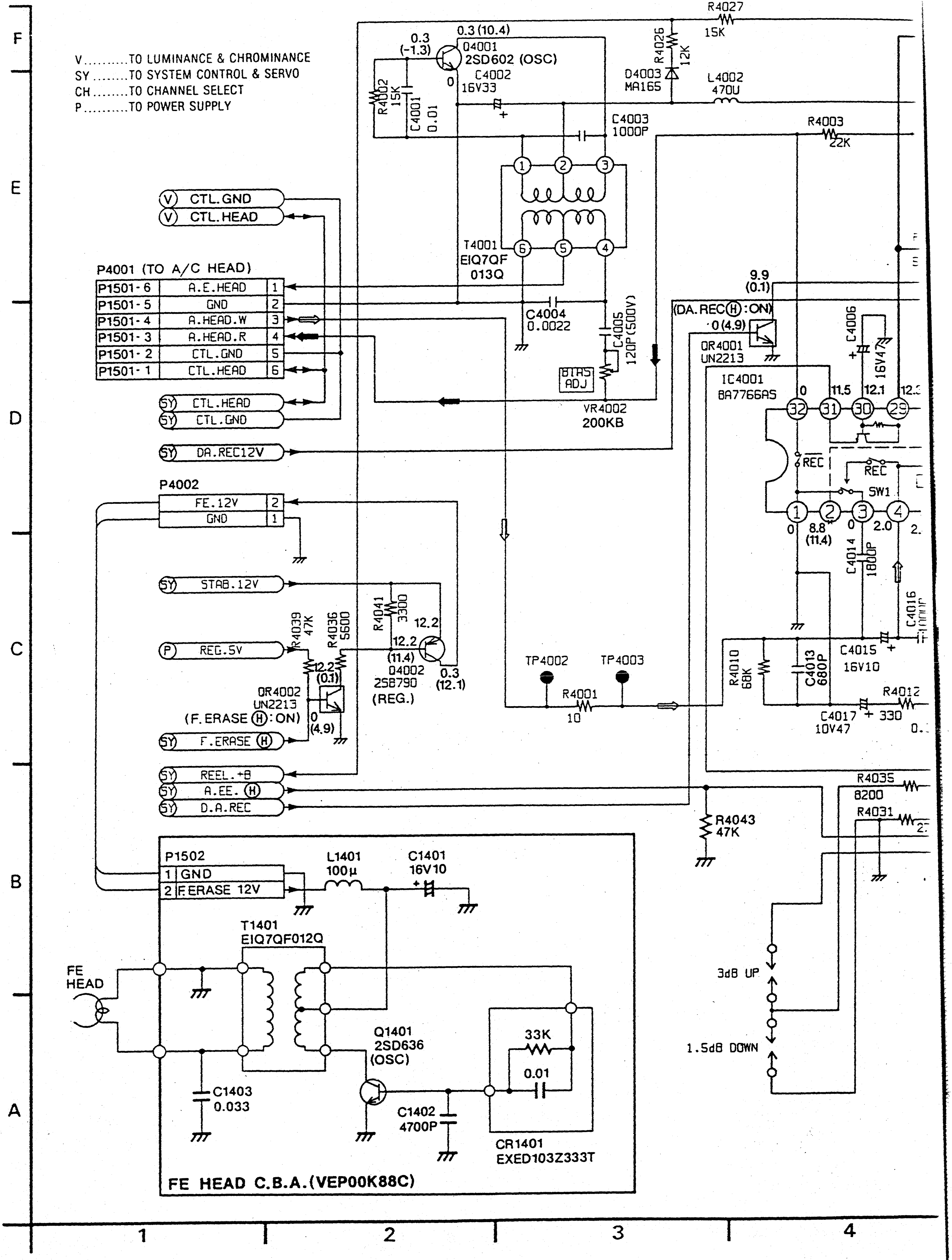


IC9002-5 PLAY 3 SCREEN

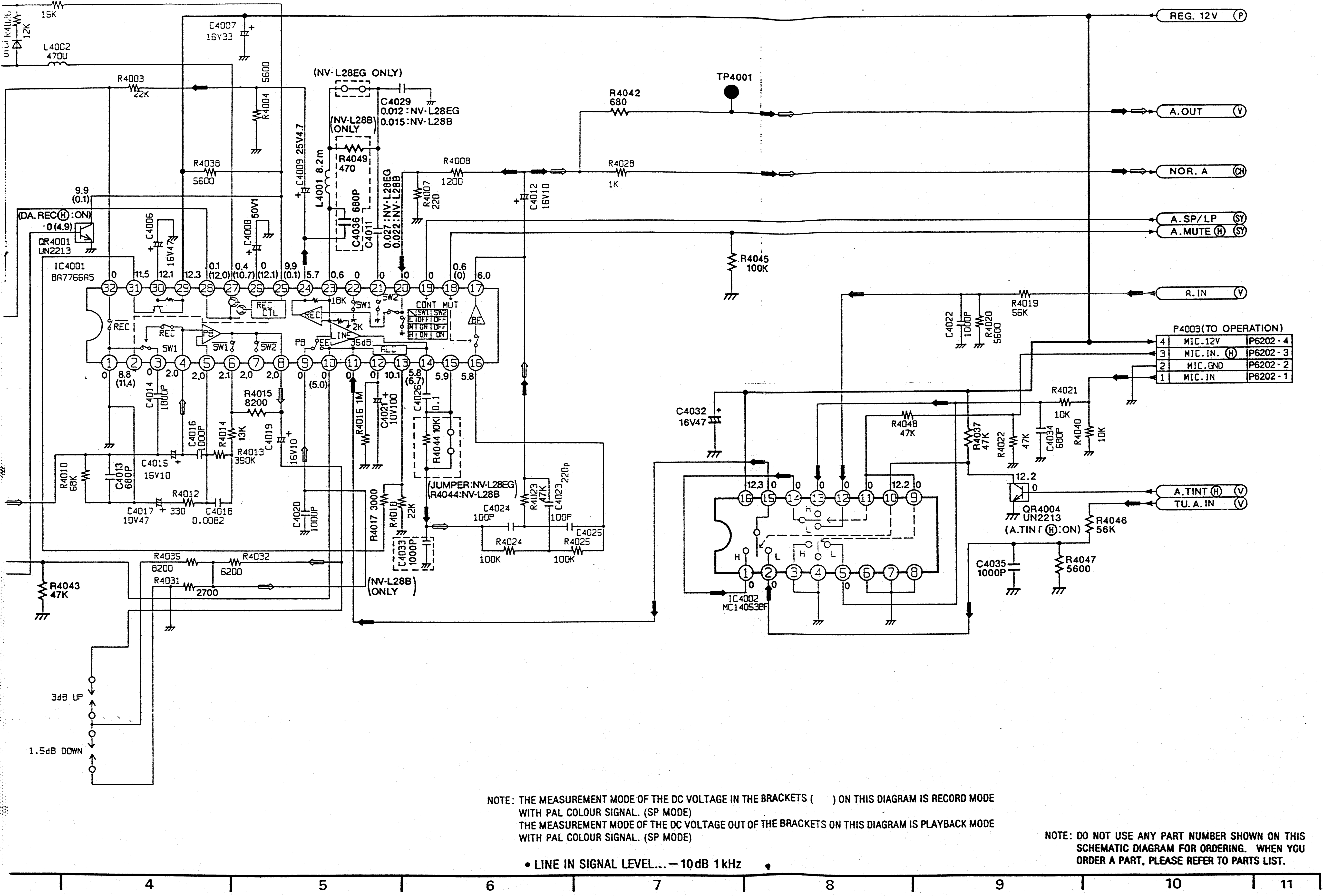


Next Page:
AUDIO Section

3-21. AUDIO SCHEMATIC DIAGRAM


V..........TO LUMINANCE & CHROMINANCE
SY........TO SYSTEM CONTROL & SERVO
CH........TO CHANNEL SELECT
P..........TO POWER SUPPLY
F
E
D
C
B
A
1
2
3
4
Q4001
2SD602 (OSC)
0.3 (10.4)
0.3
(-1.3)
C4002
16V33
R4002
15K
C4001
0.01
C4003
1000P
R4027
15K
R4026
12K
D4003
MA165
L4002
470U
R4003
22K
T4001
EIQ7QF
013Q
C4004
0.0022
C4005
120P(500V)
BIAS ADJ
VR4002
200KB
V CTL.GND
V CTL.HEAD
P4001 (TO A/C HEAD)
P1501-6 A.E.HEAD 1
P1501-5 GND 2
P1501-4 A.HEAD.W 3
P1501-3 A.HEAD.R 4
P1501-2 CTL.GND 5
P1501-1 CTL.HEAD 6
SY CTL.HEAD
SY CTL.GND
SY DA.REC12V
9.9
(0.1)
(DA.REC H:ON)
0 (4.9)
QR4001
UN2213
C4006
16V47
IC4001
BA7766AS
0
11.5
12.1
12.3
REC
REC
SW1
0
8.8
(11.4)
0
2.0
2.
C4014
180P
C4016
P4002
FE.12V 2
GND 1
SY STAB.12V
R4041
3300
12.2
12.2
(11.4)
Q4002
2SB790
(REG.)
0.3
(12.1)
P REG.5V
R4039
47K
R4036
5600
12.2
(0.1)
QR4002
UN2213
(F.ERASE H:ON)
0
(4.9)
SY F.ERASE H
TP4002
TP4003
R4001
10
R4010
68K
C4013
680P
C4015
16V10
R4012
330
C4017
10V47
SY REEL.+B
SY A.EE. H
SY D.A.REC
R4035
8200
R4031
R4043
47K
3dB UP
1.5dB DOWN
P1502
1 GND
2 F.ERASE 12V
L1401
100µ
C1401
16V10
T1401
EIQ7QF012Q
FE HEAD
Q1401
2SD636
(OSC)
33K
0.01
C1403
0.033
C1402
4700P
CR1401
EXED103Z333T
FE HEAD C.B.A.(VEP00K88C)

MAIN SIGNAL PATH IN REC MODE   MAIN SIGNAL PATH IN PLAYBACK MODE

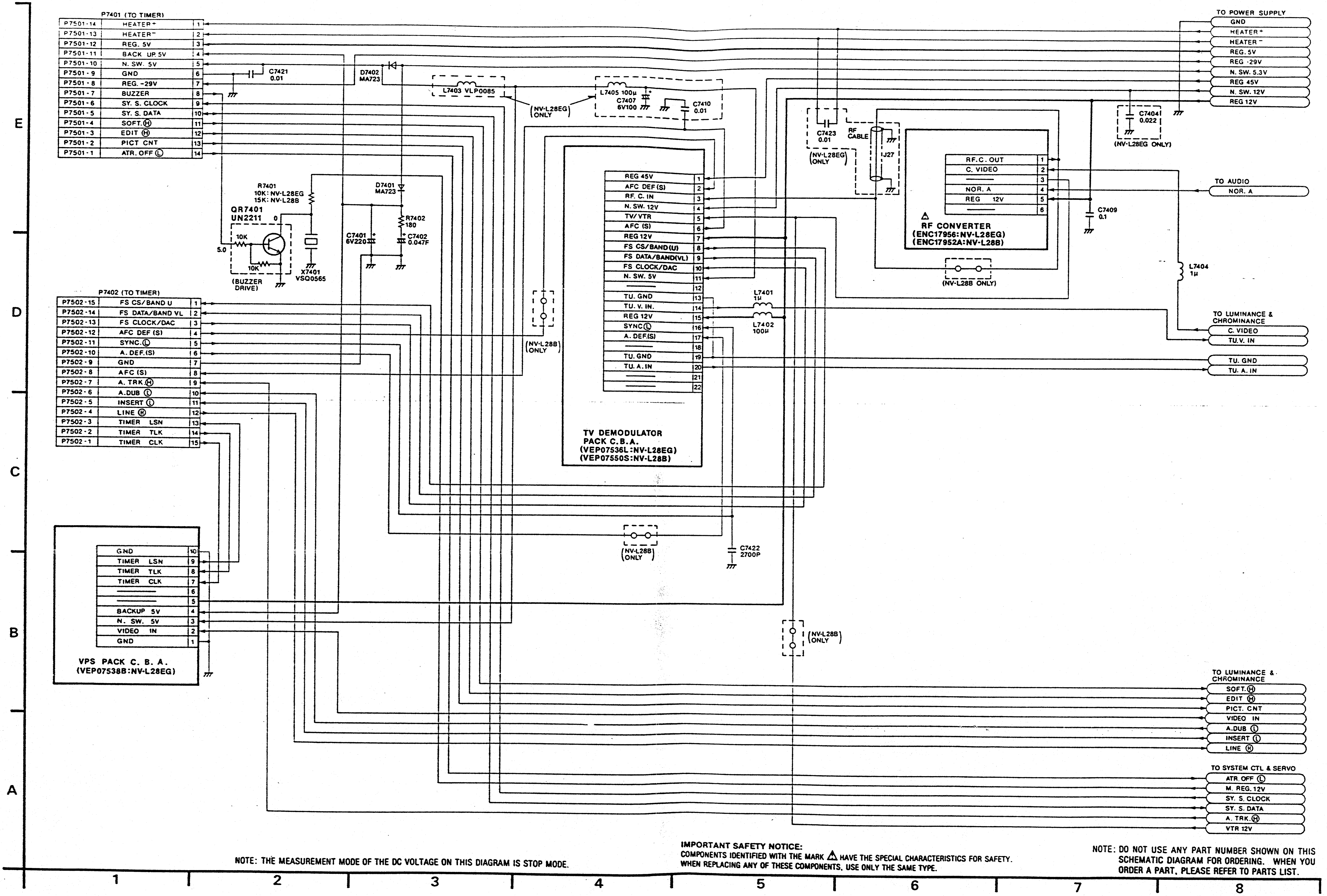

R4027
15K
12K
L4002
470U
C4007
16V33
R4003
22K
5600
R4004
(NV-L28EG ONLY)
C4029
0.012 : NV-L28EG
0.015 : NV-L28B
(NV-L28B) ONLY
R4049
470
C4009 25V4.7
L4001 8.2m
C4036 680P
C4011
0.027 : NV-L28EG
0.022 : NV-L28B
R4038
5600
9.9
(0.1)
(DA.REC Ⓗ : ON)
0 (4.9)
QR4001
UN2213
C4006
16V47
C4008
50V1
IC4001
BA7766AS
REC
SW1
PB
SW2
REC CTL
18K
2K
LINE
35dB
ALC
CONT MUT
BF
PB
EE
R4008
1200
R4007
220
C4012
16V10
R4042
680
TP4001
R4028
1K
R4045
100K
REG. 12V Ⓟ
A.OUT Ⓥ
NOR. A ⒸⒽ
A.SP/LP ⓈⓎ
A.MUTE Ⓗ ⓈⓎ
A.IN Ⓥ
R4019
56K
C4022
1000P
R4020
5600
P4003(TO OPERATION)
4 MIC.12V P6202 - 4
3 MIC.IN. Ⓗ P6202 - 3
2 MIC.GND P6202 - 2
1 MIC.IN P6202 - 1
C4014
1000P
R4015
8200
C4016
1000P
R4014
13K
C4019
16V10
R4013
390K
C4015
16V10
R4010
68K
C4013
680P
R4012
330
C4017
10V47
C4018
0.0082
R4016 1M
C4021
10V100
C4026
0.1
R4044 10K
(JUMPER:NV-L28EG)
R4044:NV-L28B
C4020
1000P
R4017 3000
R4018
22K
C4033
1000P
(NV-L28B) ONLY
C4024
100P
R4023
47K
C4023
220p
100P
C4025
R4024
100K
R4025
100K
R4035
8200
R4032
6200
R4031
2700
R4043
47K
3dB UP
1.5dB DOWN
C4032
16V47
R4048
47K
R4037
47K
R4022
47K
C4034
680P
R4021
10K
R4040
10K
12.2
QR4004
UN2213
(A.TINT Ⓗ :ON)
A.TINT Ⓗ Ⓥ
TU.A.IN Ⓥ
R4046
56K
C4035
1000P
R4047
5600
IC4002
MC14053BF
4
5
6
7
8
9
10
11

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (   ) ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL. (SP MODE)

• LINE IN SIGNAL LEVEL...—10dB 1kHz

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-22. CHANNEL SELECT SCHEMATIC DIAGRAM


P7401 (TO TIMER)
P7501-14 HEATER+ 1
P7501-13 HEATER− 2
P7501-12 REG. 5V 3
P7501-11 BACK UP 5V 4
P7501-10 N. SW. 5V 5
P7501-9 GND 6
P7501-8 REG. −29V 7
P7501-7 BUZZER 8
P7501-6 SY. S. CLOCK 9
P7501-5 SY. S. DATA 10
P7501-4 SOFT Ⓗ 11
P7501-3 EDIT Ⓗ 12
P7501-2 PICT CNT 13
P7501-1 ATR. OFF Ⓛ 14
C7421 0.01
D7402 MA723
L7403 VLP0085
(NV-L28EG ONLY)
L7405 100µ
C7407 6V100
C7410 0.01
R7401 10K: NV-L28EG 15K: NV-L28B
QR7401 UN2211
0
10K
10K
5.0
(BUZZER DRIVE)
X7401 VSQ0565
D7401 MA723
R7402 180
C7401 6V220
C7402 0.047F
P7402 (TO TIMER)
P7502-15 FS CS/BAND U 1
P7502-14 FS DATA/BAND VL 2
P7502-13 FS CLOCK/DAC 3
P7502-12 AFC DEF (S) 4
P7502-11 SYNC Ⓛ 5
P7502-10 A. DEF. (S) 6
P7502-9 GND 7
P7502-8 AFC (S) 8
P7502-7 A. TRK Ⓗ 9
P7502-6 A. DUB Ⓛ 10
P7502-5 INSERT Ⓛ 11
P7502-4 LINE Ⓗ 12
P7502-3 TIMER LSN 13
P7502-2 TIMER TLK 14
P7502-1 TIMER CLK 15
(NV-L28B ONLY)
REG 45V 1
AFC DEF (S) 2
RF. C. IN 3
N. SW. 12V 4
TV/VTR 5
AFC (S) 6
REG 12V 7
FS CS/BAND (U) 8
FS DATA/BAND (VL) 9
FS CLOCK/DAC 10
N. SW. 5V 11
12
TU. GND 13
TU. V. IN. 14
REG 12V 15
SYNC Ⓛ 16
A. DEF. (S) 17
18
TU. GND 19
TU. A. IN 20
21
22
TV DEMODULATOR PACK C.B.A. (VEP07536L: NV-L28EG) (VEP07550S: NV-L28B)
L7401 1µ
L7402 100µ
C7423 0.01
RF CABLE
J27
(NV-L28EG ONLY)
RF.C. OUT 1
C. VIDEO 2
3
NOR. A 4
REG 12V 5
6
△ RF CONVERTER (ENC17956: NV-L28EG) (ENC17952A: NV-L28B)
(NV-L28B ONLY)
C7404 0.022
(NV-L28EG ONLY)
C7409 0.1
L7404 1µ
TO POWER SUPPLY
GND
HEATER+
HEATER−
REG. 5V
REG −29V
N. SW. 5.3V
REG 45V
N. SW. 12V
REG 12V
TO AUDIO
NOR. A
TO LUMINANCE & CHROMINANCE
C. VIDEO
TU.V. IN
TU. GND
TU. A. IN
GND 10
TIMER LSN 9
TIMER TLK 8
TIMER CLK 7
6
5
BACKUP 5V 4
N. SW. 5V 3
VIDEO IN 2
GND 1
VPS PACK C. B. A. (VEP07538B: NV-L28EG)
(NV-L28B ONLY)
C7422 2700P
(NV-L28B ONLY)
TO LUMINANCE & CHROMINANCE
SOFT Ⓗ
EDIT Ⓗ
PICT. CNT
VIDEO IN
A.DUB Ⓛ
INSERT Ⓛ
LINE Ⓗ
TO SYSTEM CTL & SERVO
ATR. OFF Ⓛ
M. REG. 12V
SY. S. CLOCK
SY. S. DATA
A. TRK. Ⓗ
VTR 12V
E
D
C
B
A
1
2
3
4
5
6
7
8

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

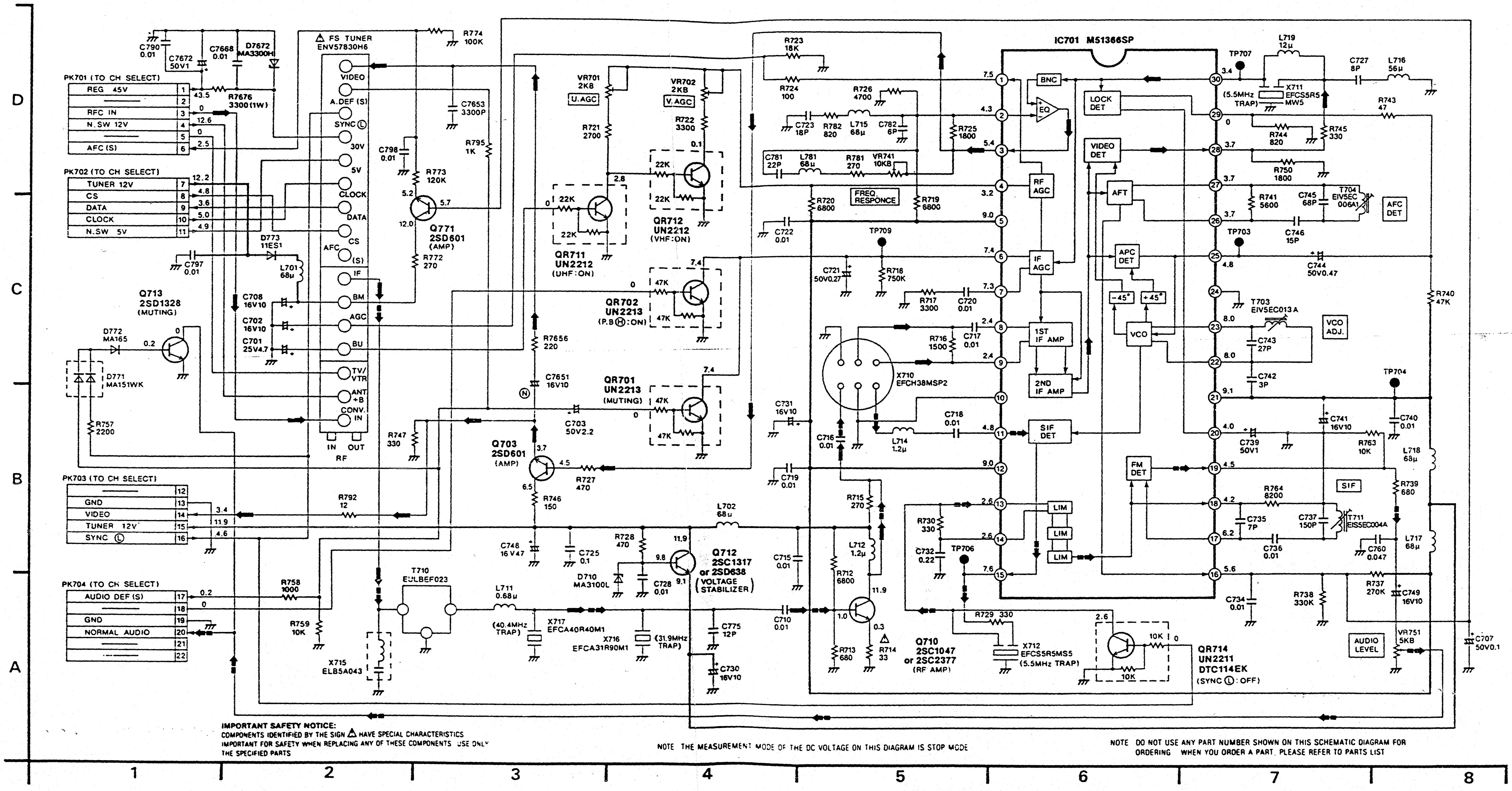
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK △ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-23. TV DEMODULATOR PACK SCHEMATIC DIAGRAM (NV-L28EG)

VIDEO SIGNAL PATH

AUDIO SIGNAL PATH


D
C
B
A
1
2
3
4
5
6
7
8
PK701 (TO CH SELECT)
REG 45V
RFC IN
N.SW 12V
AFC (S)
PK702 (TO CH SELECT)
TUNER 12V
CS
DATA
CLOCK
N.SW 5V
PK703 (TO CH SELECT)
GND
VIDEO
TUNER 12V
SYNC Ⓛ
PK704 (TO CH SELECT)
AUDIO DEF (S)
GND
NORMAL AUDIO
C790 0.01
C7672 50V1
C7668 0.01
D7672 MA3300H
R7676 3300 (1W)
△ FS TUNER ENV57830H6
VIDEO
A.DEF (S)
SYNC Ⓛ
30V
5V
CLOCK
DATA
CS
AFC (S)
IF
BM
AGC
BU
TV/VTR
ANT +B
CONV. IN
IN OUT RF
R774 100K
C7653 3300P
C798 0.01
R795 1K
R773 120K
Q771 2SD601 (AMP)
R772 270
C797 0.01
D773 11ES1
L701 68μ
C708 16V10
C702 16V10
C701 25V4.7
Q713 2SD1328 (MUTING)
D772 MA165
D771 MA151WK
R757 2200
VR701 2K8 U.AGC
VR702 2K8 V.AGC
R721 2700
R722 3300
QR711 UN2212 (UHF:ON)
QR712 UN2212 (VHF:ON)
QR702 UN2213 (P.B Ⓗ:ON)
QR701 UN2213 (MUTING)
R7656 220
C7651 16V10
C703 50V2.2
R747 330
Q703 2SD601 (AMP)
R727 470
R746 150
R792 12
R758 1000
R759 10K
X715 ELB5A043
T710 EULBEF023
L711 0.68μ
(40.4MHz TRAP) X717 EFCA40R40M1
X716 EFCA31R90M1 (31.9MHz TRAP)
C748 16V47
C725 0.1
R728 470
D710 MA3100L
C728 0.01
Q712 2SC1317 or 2SD638 (VOLTAGE STABILIZER)
L702 68μ
C775 12P
C730 16V10
C710 0.01
C715 0.01
R723 18K
R724 100
R726 4700
C723 18P
R782 820
L715 68μ
C782 6P
R725 1800
C781 22P
L781 68μ
R781 270
VR741 10KB
R720 6800
FREQ. RESPONCE
R719 6800
C722 0.01
TP709
C721 50V0.27
R718 750K
R717 3300
C720 0.01
R716 1500
C717 0.01
X710 EFCH38MSP2
C731 16V10
C716 0.01
L714 1.2μ
C718 0.01
C719 0.01
R715 270
L712 1.2μ
R712 6800
R730 330
C732 0.22
TP706
R713 680
R714 33
Q710 2SC1047 or 2SC2377 (RF AMP)
R729 330
X712 EFCS5R5MS5 (5.5MHz TRAP)
QR714 UN2211 DTC114EK (SYNC Ⓛ: OFF)
IC701 M51366SP
BNC
EQ
LOCK DET
VIDEO DET
RF AGC
AFT
IF AGC
APC DET
-45°
+45°
VCO
1ST IF AMP
2ND IF AMP
SIF DET
FM DET
LIM
LIM
LIM
TP707
L719 12μ
C727 8P
L716 56μ
(5.5MHz TRAP)
X711 EFCS5R5MW5
R743 47
R744 820
R745 330
R750 1800
R741 5600
C745 68P
T704 EIV5EC006A1
AFC DET
TP703
C746 15P
C744 50V0.47
T703 EIV5EC013A
VCO ADJ.
C743 27P
C742 3P
R740 47K
TP704
C741 16V10
C740 0.01
C739 50V1
R763 10K
L718 68μ
R764 8200
SIF
R739 680
C735 7P
C737 150P
T711 EIS5EC004A
C736 0.01
C760 0.047
L717 68μ
C734 0.01
R738 330K
R737 270K
C749 16V10
AUDIO LEVEL
VR751 5KB
C707 50V0.1

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN △ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SPECIFIED PARTS

NOTE THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE

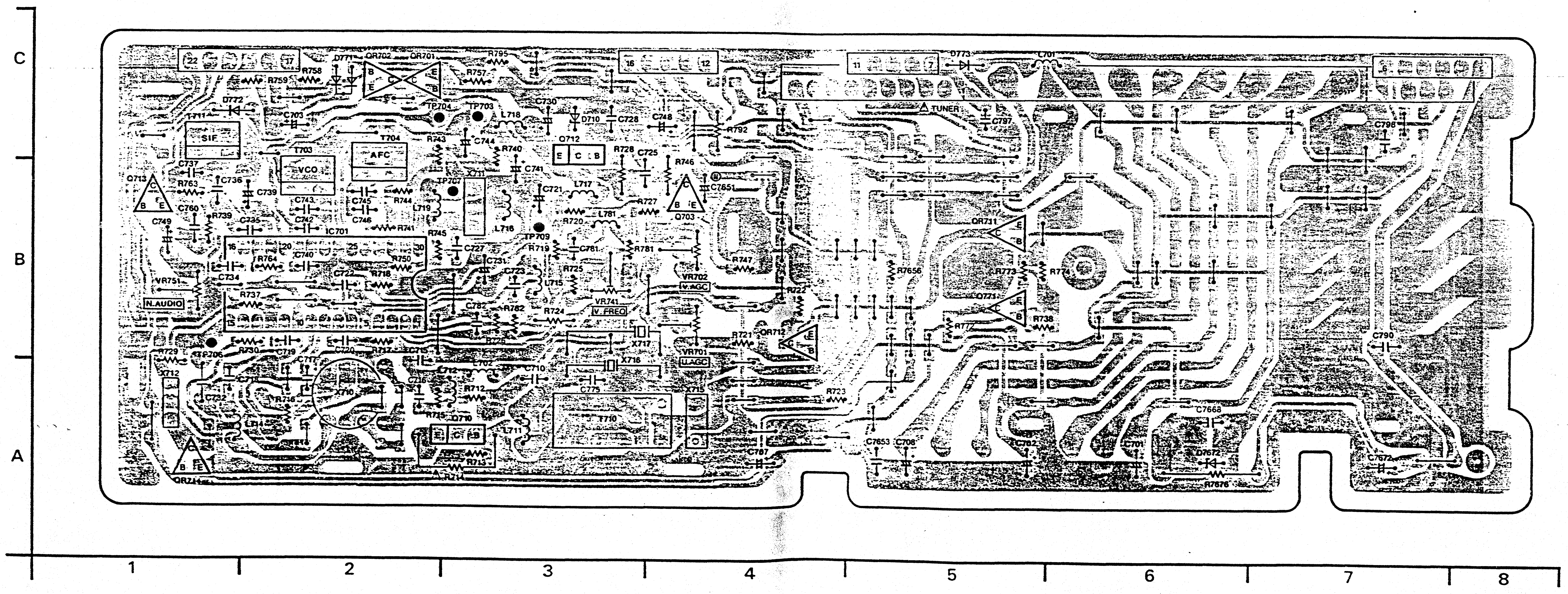
NOTE DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST

Back Page:
CHANNEL SELECT Section

3-24. TV DEMODULATOR PACK C.B.A. (VEP07536L: NV-L28EG)

TV DEMODULATOR PACK C.B.A.			
Transistor		**Test Point**	
Q703	B-4	TP703	C-3
Q710	A-3	TP704	C-2
Q712	C-3	TP706	B-1
Q713	B-1	TP707	B-3
Q771	B-5	TP709	B-3
Transistor & Resistor		**Adjustment**	
QR701	C-2	T703	B-2
QR702	C-2	T704	C-2
QR711	B-5	T710	A-3
QR712	B-4	T711	C-1
QR714	A-1	VR701	B-4
Integrated Circuit		VR702	B-4
		VR741	B-3
IC701	B-2	VR751	B-1

ADDRESS INFORMATION



C
B
A
1
2
3
4
5
6
7
8
SIF
VCO
AFC
T704
T703
T711
Q713
Q712
Q703
QR702
QR701
QR711
QR712
QR714
Q771
Q710
IC701
TP704
TP703
TP707
TP709
TP706
D771
D772
D773
D710
L701
L711
L715
L716
L717
L718
L719
L781
TUNER
VR751
N.AUDIO
VR741
V.FREQ
VR702
V.AGC
VR701
I.AGC
T710
X711
X712
X715
X716
X717
R7656
R773
R774
R738
R772
R792
R746
R747
R721
R722
R723
C790
C797
C798
C7651
C7653
C708
C782
C701
C7668
D7672
R7676
C7672
C787
C775
C710
C702
C716
R712
R713
R714
R715
R729
R730
R737
R739
R740
R741
R743
R744
R745
R750
R757
R758
R759
R763
R764
R718
R719
R720
R724
R725
R727
R728
R781
R782
R795
C703
C721
C722
C723
C725
C727
C728
C730
C731
C734
C735
C736
C737
C739
C740
C741
C742
C743
C744
C745
C746
C748
C749
C760
C761

3—59

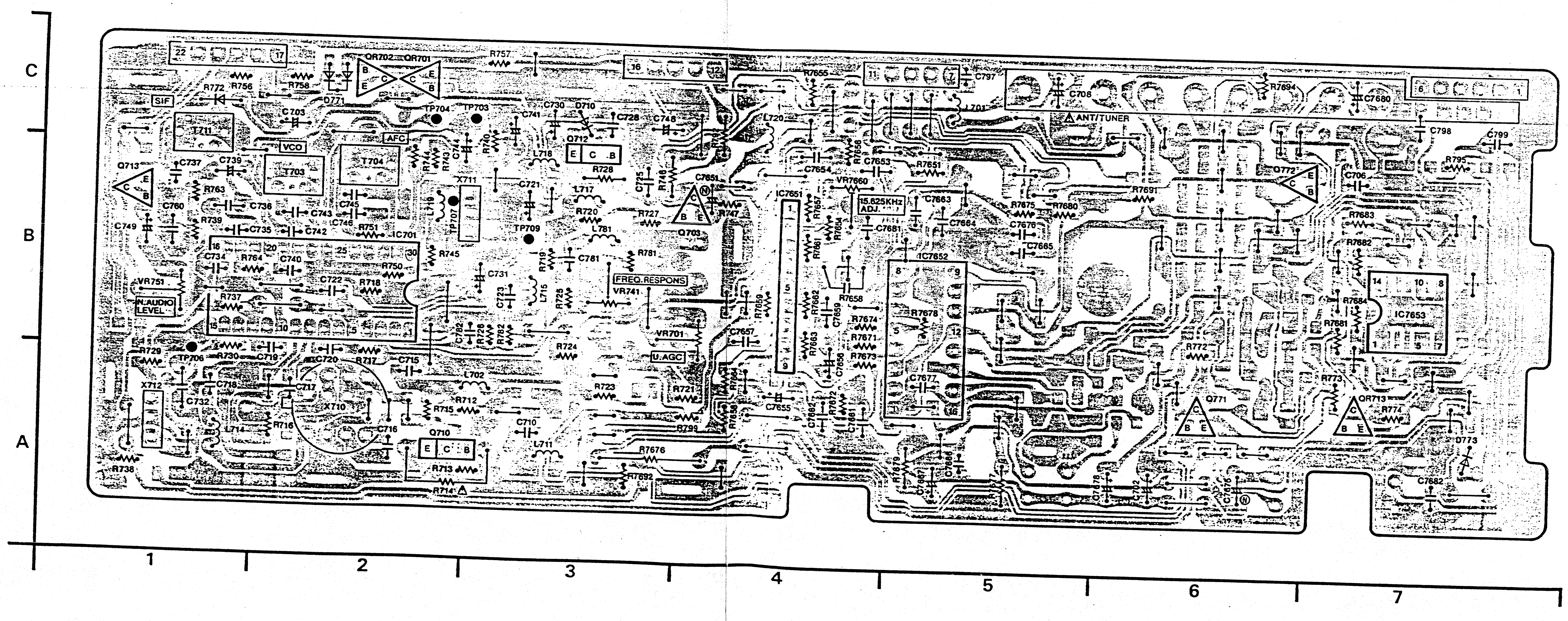
3—60

3-25. TV DEMODULATOR PACK C.B.A. (VEP07550S : NV-L28B)

TV DEMODULATOR PACK C.B.A.

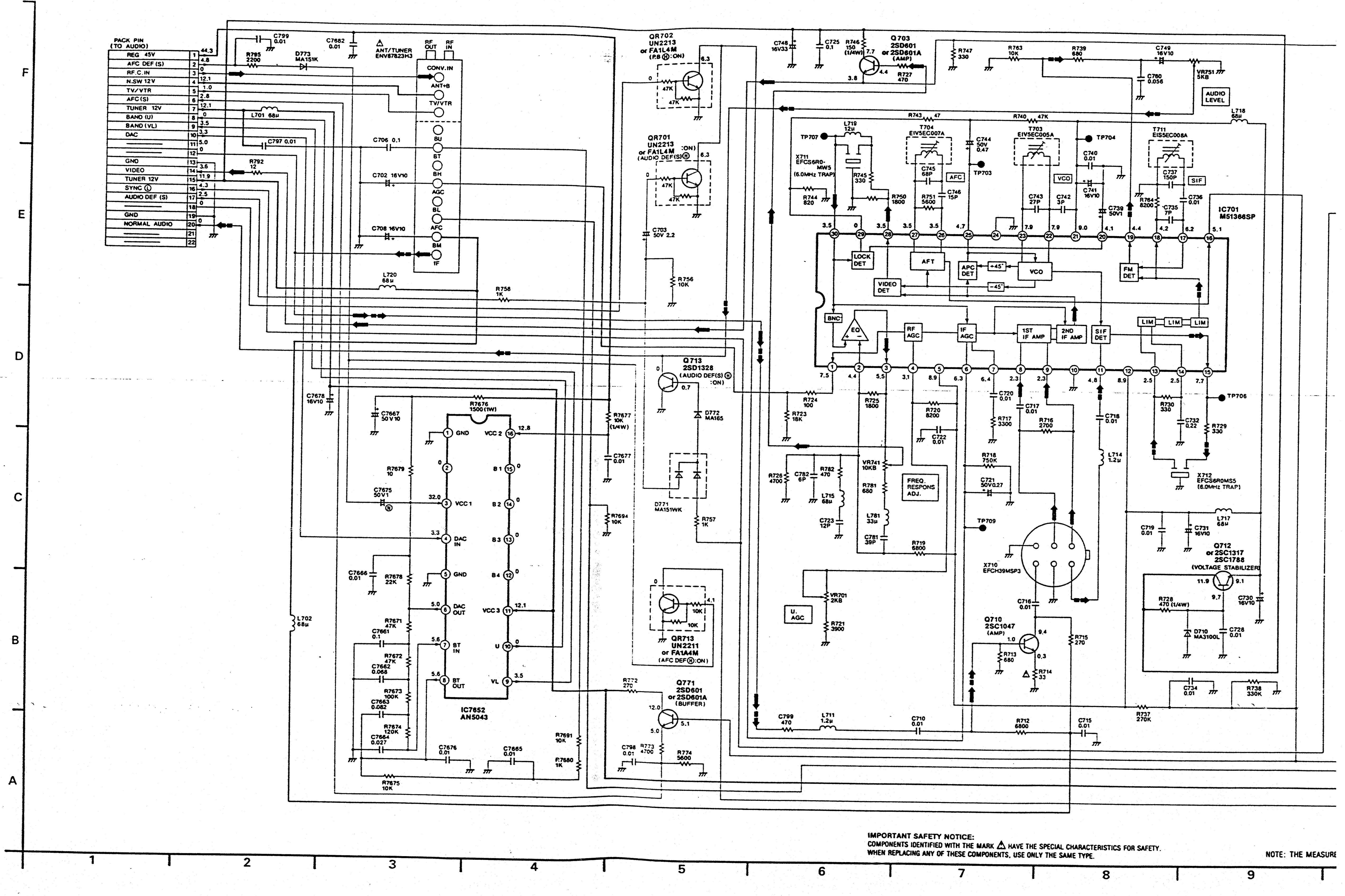
Transistor		Test Point	
Q703	B-4	TP703	C-3
Q710	A-2	TP704	C-2
Q712	B-3	TP707	B-2
Q713	B-1	TP709	B-3
Q771	A-6	**Adjustment**	
Q772	B-6	VR701	B-3
Transistor & Resistor		VR741	B-3
QR701	C-2	VR751	B-1
QR702	C-2	T703	B-2
QR713	A-7	T704	B-2
Integrated Circuit		T711	C-1
IC701	B-2		
IC7651	B-4		
IC7652	B-5		
IC7653	B-7		

ADDRESS INFORMATION


C
B
A
1
2
3
4
5
6
7
SIF
T711
VCO
T703
T704
AFC
QR702
QR701
TP704
TP703
TP707
TP709
TP706
Q713
Q712
Q703
Q710
Q771
Q772
QR713
D771
D710
D773
X711
X712
X710
IC701
IC7651
IC7652
IC7653
VR751
N.AUDIO LEVEL
FREQ.RESPONS
VR741
VR701
U.AGC
15.625KHz ADJ.
VR7660
ANT/TUNER
L701
L702
L711
L714
L715
L716
L717
L718
L720
L781
R757
R772
R756
R758
R763
R739
R764
R737
R750
R751
R745
R718
R729
R730
R738
R712
R713
R714
R715
R716
R717
R719
R720
R721
R723
R724
R725
R727
R728
R740
R743
R744
R746
R747
R762
R781
R7655
R7651
R7656
R7657
R7658
R7659
R7661
R7662
R7663
R7664
R7671
R7673
R7674
R7675
R7676
R7678
R7680
R7681
R7682
R7683
R7684
R7691
R7692
R7694
R772
R773
R774
R795
R799
C703
C706
C708
C710
C715
C716
C717
C718
C719
C720
C721
C722
C723
C725
C728
C730
C731
C732
C734
C735
C736
C737
C739
C740
C741
C742
C743
C744
C745
C746
C748
C749
C760
C781
C782
C797
C798
C799
C7651
C7653
C7654
C7655
C7657
C7659
C7663
C7664
C7665
C7676
C7677
C7680
C7681
C7682
22
17
16
12
6
1
14
10
8
7

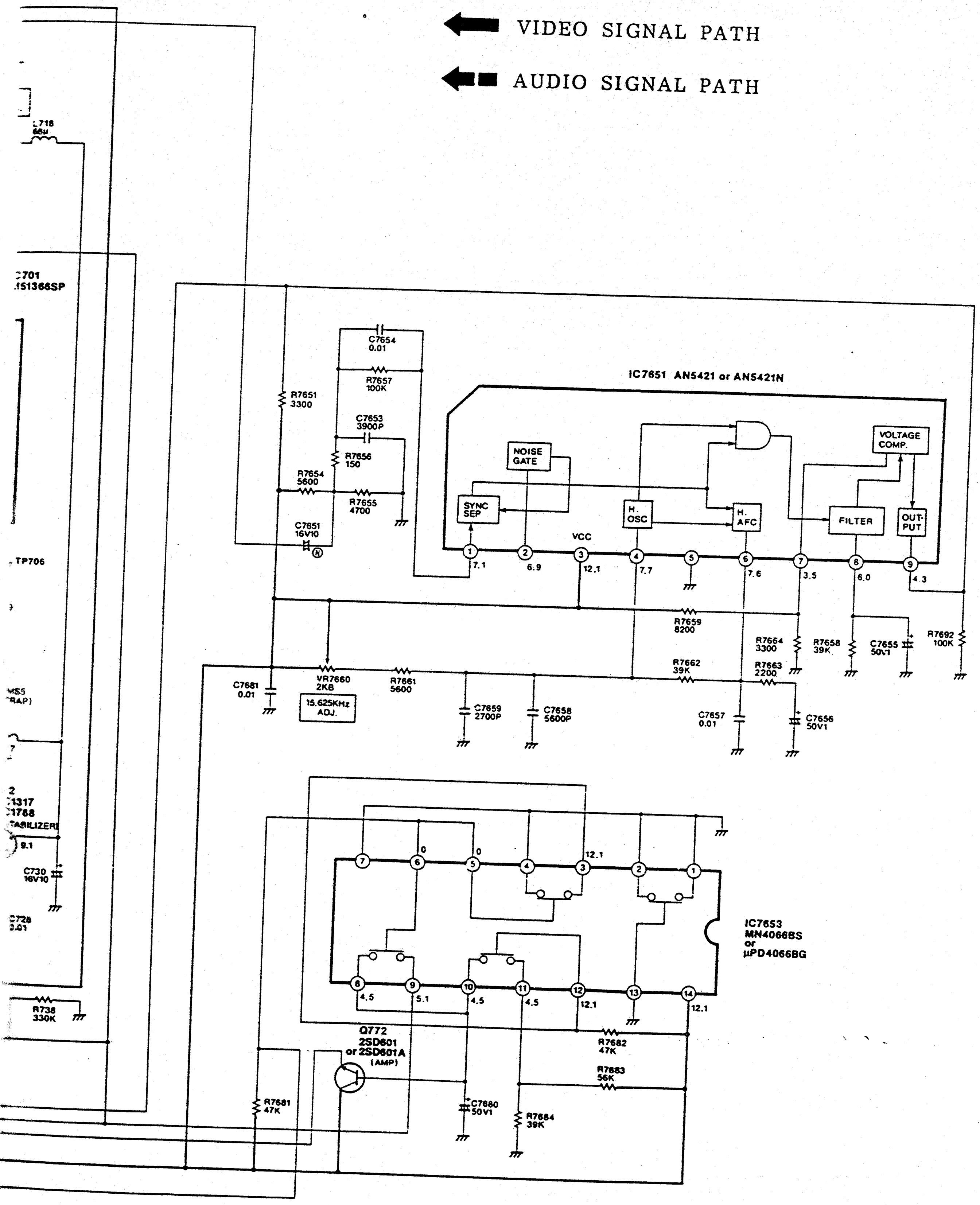
Back Page:
TV DEMODULATOR Section

3-26. TV DEMODULATOR PACK SCHEMATIC DIAGRAM (NV-L28B)


PACK PIN (TO AUDIO)
1 REG 45V 44.3
2 AFC DEF (S) 4.8
3 RF.C.IN 0
4 N.SW 12V 12.1
5 TV/VTR 1.0
6 AFC(S) 2.8
7 TUNER 12V 12.1
8 BAND (U) 0
9 BAND (VL) 3.5
10 DAC 3.3
11 5.0
12 0
13 GND
14 VIDEO 3.6
15 TUNER 12V 11.9
16 SYNC Ⓛ 4.3
17 AUDIO DEF (S) 2.5
18 0
19 GND
20 NORMAL AUDIO 0
21
22
C799 0.01
R795 2200
D773 MA151K
C7682 0.01
ANT/TUNER ENV87823H3
RF OUT
RF IN
CONV.IN
ANT+B
TV/VTR
BU
BT
BH
AGC
BL
AFC
BM
IF
L701 68μ
C797 0.01
C706 0.1
R792 12
C702 16V10
C708 16V10
L720 68μ
R758 1K
C7678 16V10
C7667 50V10
R7676 1500(1W)
IC7852 AN5043
GND
VCC 2
B1
VCC 1
B2
DAC IN
B3
GND
B4
DAC OUT
VCC 3
BT IN
U
BT OUT
VL
R7679 10
C7675 50V1
C7666 0.01
R7678 22K
R7671 47K
C7661 0.1
R7672 47K
C7662 0.068
R7673 100K
C7663 0.082
R7674 120K
C7664 0.027
C7676 0.01
C7665 0.01
R7675 10K
R7677 10K (1/4W)
C7677 0.01
R7694 10K
R7691 10K
R7680 1K
L702 68μ
QR702 UN2213 or FA1L4M (P.B Ⓗ:ON)
47K
QR701 UN2213 or FA1L4M (AUDIO DEF(S)Ⓗ:ON)
C703 50V 2.2
R756 10K
Q713 2SD1328 (AUDIO DEF(S) Ⓗ :ON)
D772 MA165
D771 MA151WK
R757 1K
QR713 UN2211 or FA1A4M (AFC DEF Ⓗ:ON)
10K
R772 270
Q771 2SD601 or 2SD601A (BUFFER)
C798 0.01
R773 4700
R774 5600
C748 16V33
C725 0.1
R746 150 (1/4W)
Q703 2SD601 or 2SD601A (AMP)
R727 470
R747 330
R763 10K
R739 680
C749 16V10
C760 0.056
VR751 5KB
AUDIO LEVEL
L718 68μ
R743 47
R740 47K
TP707
L719 12μ
X711 EFCS6R0-MW5 (6.0MHz TRAP)
R744 820
R745 330
R750 1800
T704 EIV5EC007A
C745 68P
R751 5600
C746 15P
AFC
C744 50V 0.47
TP703
T703 EIV5EC005A
C743 27P
C742 3P
VCO
C741 16V10
C740 0.01
TP704
C739 50V1
T711 EIS5EC008A
C737 150P
SIF
R764 8200
C735 7P
C736 0.01
IC701 M51366SP
LOCK DET
AFT
APC DET
+45°
-45°
VCO
FM DET
VIDEO DET
BNC
EQ
RF AGC
IF AGC
1ST IF AMP
2ND IF AMP
SIF DET
LIM
R724 100
R723 18K
R725 1800
R720 8200
C722 0.01
C720 0.01
R717 3300
C717 0.01
R716 2700
C718 0.01
R730 330
C732 0.22
R729 330
TP706
R726 4700
C782 6P
R782 470
VR741 10KB
L715 68μ
R781 680
C723 12P
L781 33μ
C781 39P
FREQ. RESPONS ADJ.
R718 750K
C721 50V0.27
TP709
R719 6800
L714 1.2μ
X712 EFCS6R0MS5 (6.0MHz TRAP)
X710 EFCH39MSP3
C719 0.01
C731 16V10
L717 68μ
Q712 2SC1317 or 2SC1788 (VOLTAGE STABILIZER)
VR701 2KB
U. AGC
R721 3900
C716 0.01
Q710 2SC1047 (AMP)
R713 680
R714 33
R715 270
R728 470 (1/4W)
D710 MA3100L
C728 0.01
C730 16V10
C799 470
L711 1.2μ
C710 0.01
R712 6800
C715 0.01
C734 0.01
R738 330K
R737 270K
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK △ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASURE


VIDEO SIGNAL PATH
AUDIO SIGNAL PATH
L718
68μ
C701
151366SP
TP706
MS5
RAP)
2
1317
1788
TABILIZER
9.1
C730
16V10
C728
0.01
R738
330K
R7651
3300
C7654
0.01
R7657
100K
C7653
3900P
R7656
150
R7654
5600
R7655
4700
C7651
16V10
Ⓝ
IC7651 AN5421 or AN5421N
NOISE GATE
SYNC SEP
H. OSC
H. AFC
VOLTAGE COMP.
FILTER
OUT-PUT
VCC
7.1
6.9
12.1
7.7
7.6
3.5
6.0
4.3
R7659
8200
R7664
3300
R7658
39K
C7655
50V1
R7692
100K
R7662
39K
R7663
2200
C7681
0.01
VR7660
2KB
15.625KHz ADJ.
R7661
5600
C7659
2700P
C7658
5600P
C7657
0.01
C7656
50V1
IC7653
MN4066BS
or
μPD4066BG
0
0
12.1
4.5
5.1
4.5
4.5
12.1
12.1
Q772
2SD601
or 2SD601A
(AMP)
R7682
47K
R7683
56K
R7681
47K
C7680
50V1
R7684
39K

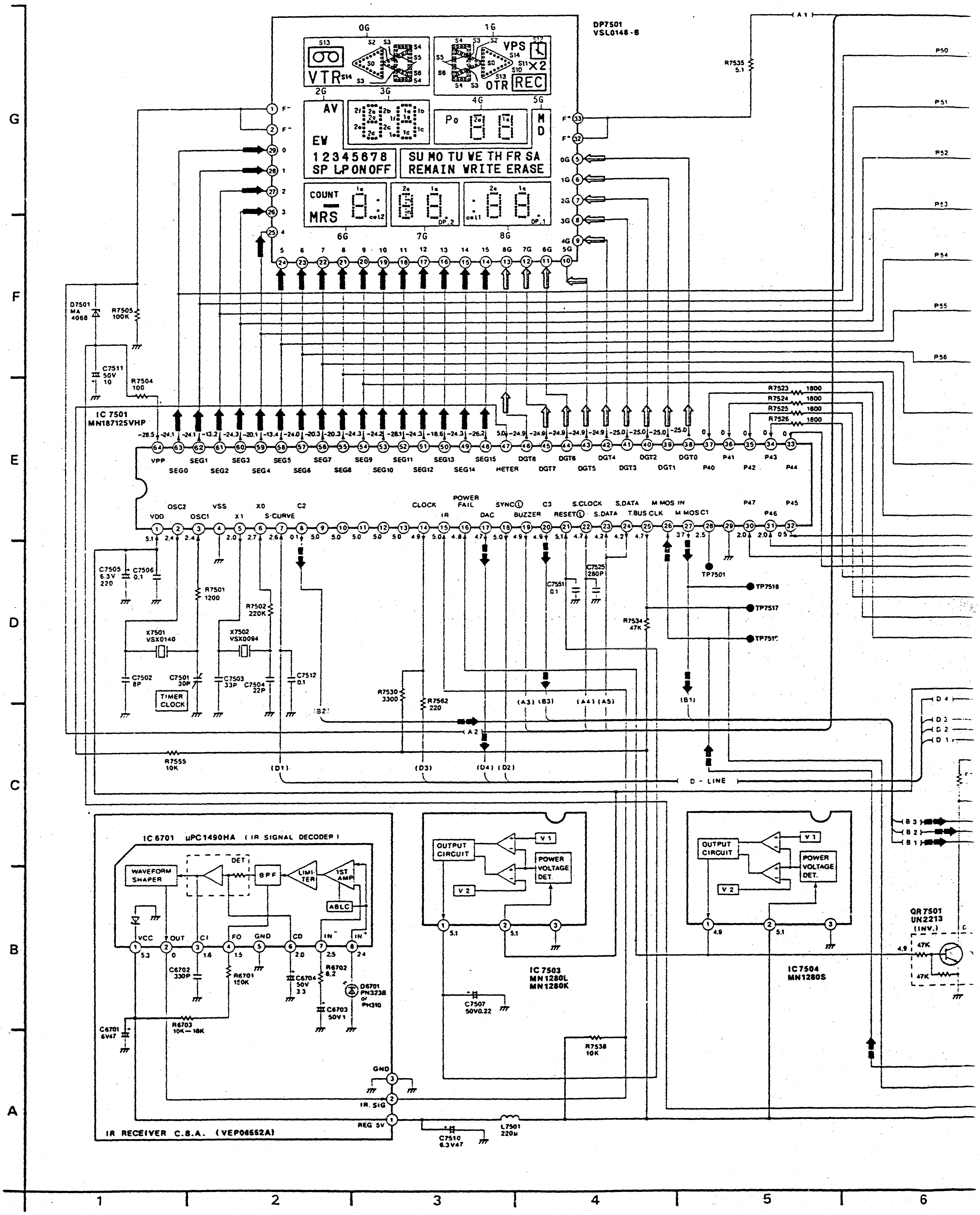
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

9 10 11 12 13

Next Page:
TIMER & OPERATION Section

3-27. TIMER & OPERATION SCHEMATIC DIAGRAM (NV-L28EG)

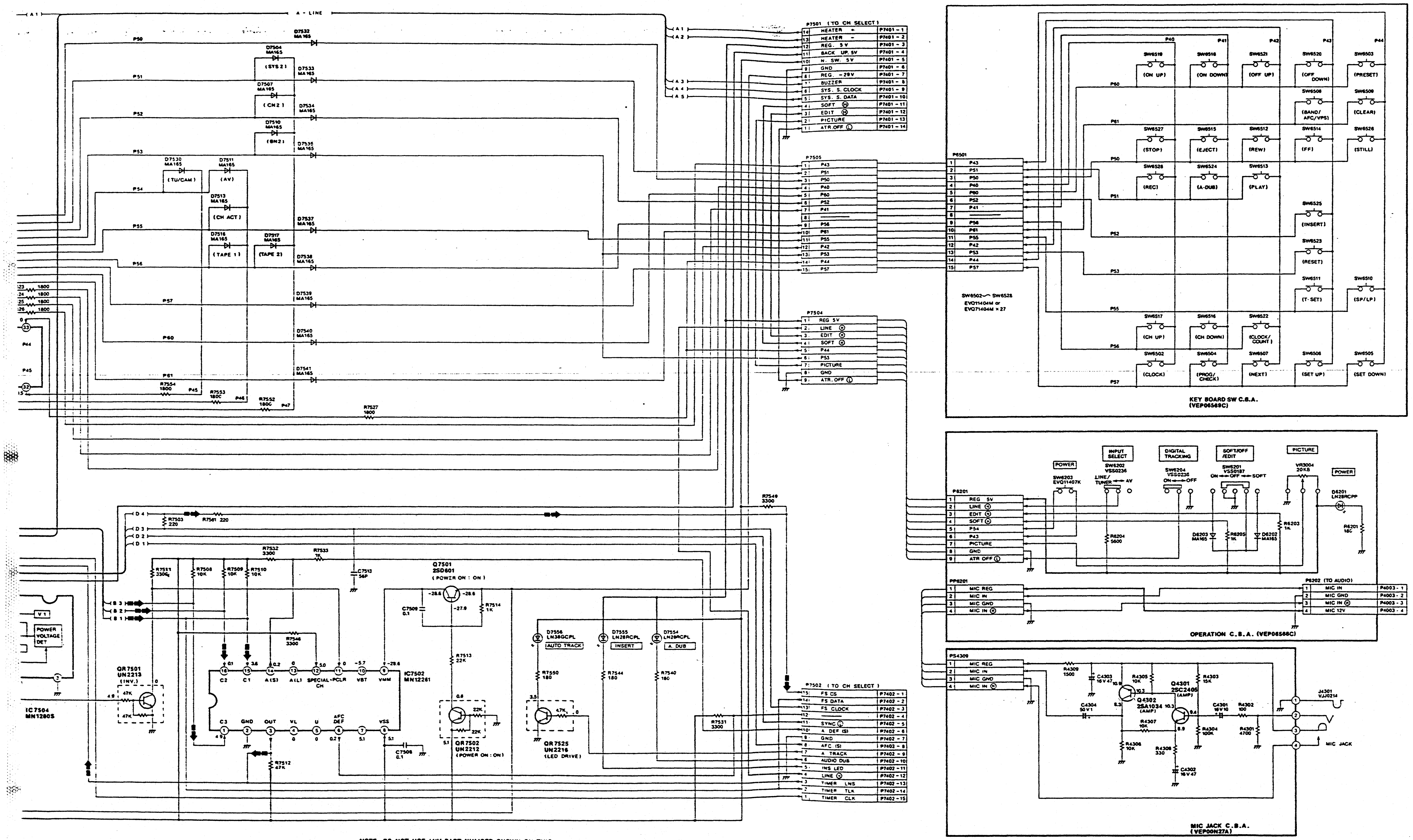

DP7501
VSL0148-B
0G
1G
VTR
VPS
OTR
REC
2G
3G
4G
5G
AV
EW
Po
M
D
12345678
SP LP ON OFF
SU MO TU WE TH FR SA
REMAIN WRITE ERASE
COUNT
MRS
6G
7G
8G
R7535 5.1
P50
P51
P52
P53
P54
P55
P56
A1
A2
D7501 MA 4068
R7505 100K
C7511 50V 10
R7504 100
IC 7501
MN18712SVHP
VPP
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
METER
DGT8
DGT7
DGT6
DGT5
DGT4
DGT3
DGT2
DGT1
DGT0
P40
P41
P42
P43
P44
R7523 1800
R7524 1800
R7525 1800
R7526 1800
VDD
OSC2
OSC1
VSS
X0
X1
S-CURVE
C2
CLOCK
POWER FAIL
IR
DAC
SYNC
BUZZER
C3
RESET
S.CLOCK
S.DATA
S.DATA
T.BUS CLK
M MOS IN
M MOS C1
P47
P46
P45
C7505 6.3V 220
C7506 0.1
R7501 1200
R7502 220K
X7501 VSX0140
X7502 VSX0094
C7502 8P
C7501 30P
TIMER CLOCK
C7503 33P
C7504 22P
C7512 0.1
C7551 0.1
C7525 280P
TP7501
TP7518
TP7517
TP7519
R7534 47K
R7530 3300
R7562 220
(A3)
(B3)
(A4)
(A5)
(B1)
(S2)
R7555 10K
(D1)
(D3)
(D4)
(D2)
D - LINE
D4
D3
D2
D1
B3
B2
B1
IC 6701 μPC1490HA (IR SIGNAL DECODER)
WAVEFORM SHAPER
DET
BPF
LIMITER
1ST AMP
ABLC
VCC
OUT
CI
FO
GND
CD
IN⁻
IN⁺
C6702 330P
R6701 150K
C6704 50V 3.3
R6702 8.2
D6701 PN3238 or PH310
C6703 50V1
C6701 6V47
R6703 10K—18K
GND
IR. SIG
REG 5V
IR RECEIVER C.B.A. (VEP06552A)
OUTPUT CIRCUIT
V1
V2
POWER VOLTAGE DET.
IC 7503
MN1280L
MN1280K
C7507 50V0.22
R7536 10K
IC 7504
MN1280S
QR7501
UN2213
(INV.)
47K
47K
C7510 6.3V47
L7501 220μ
G
F
E
D
C
B
A
1
2
3
4
5
6

EG)

SEGMENT CONTROL SIGNAL

GRID CONTROL SIGNAL

TUNE CONTROL SIGNAL

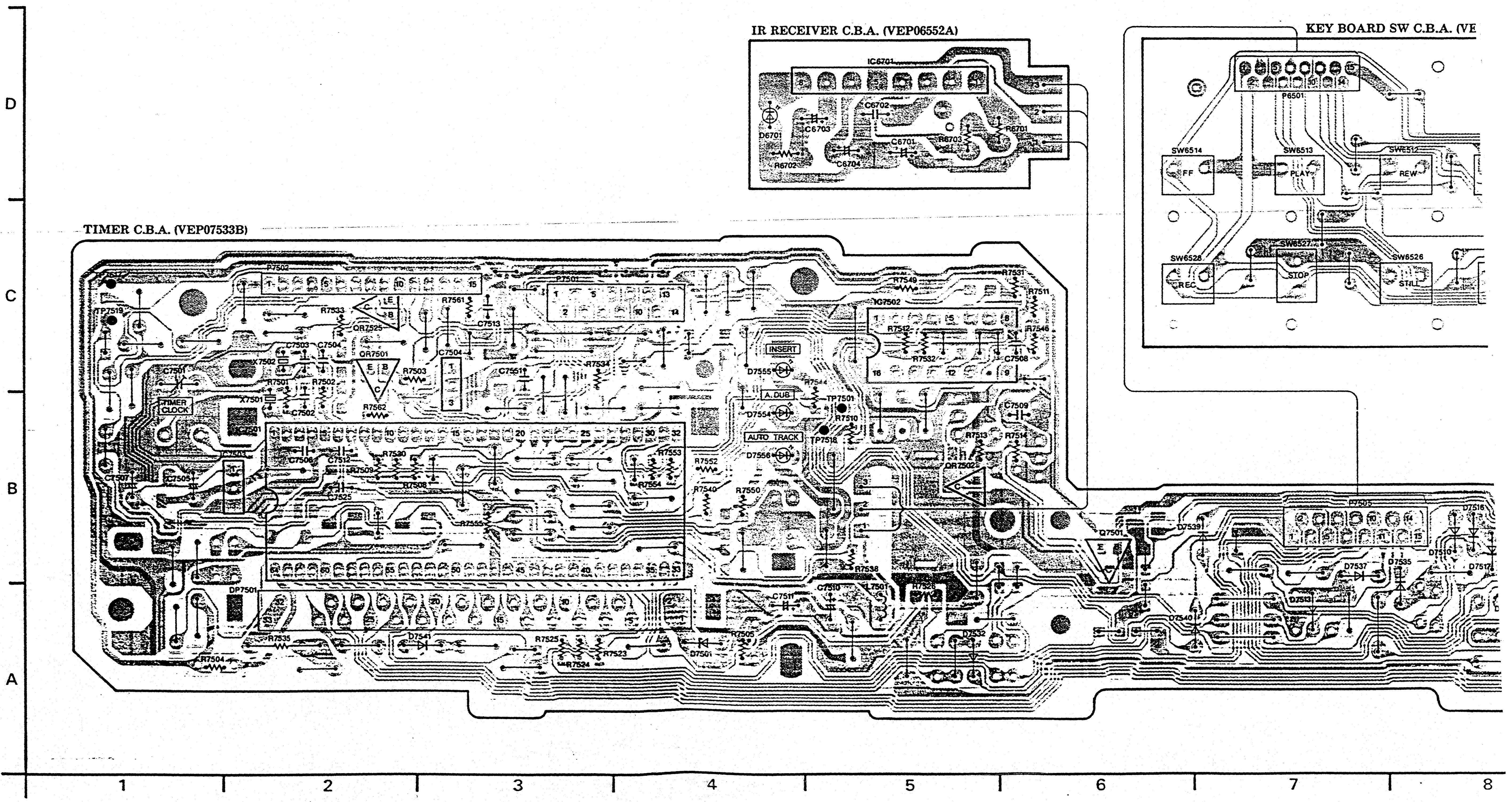

A – LINE
P7501 (TO CH SELECT)
14 HEATER + P7401-1
13 HEATER − P7401-2
12 REG. 5V P7401-3
11 BACK UP. 5V P7401-4
10 N. SW. 5V P7401-5
9 GND P7401-6
8 REG. −29V P7401-7
7 BUZZER P7401-8
6 SYS. S. CLOCK P7401-9
5 SYS. S. DATA P7401-10
4 SOFT Ⓗ P7401-11
3 EDIT Ⓗ P7401-12
2 PICTURE P7401-13
1 ATR.OFF Ⓛ P7401-14
P50
P51
P52
P53
P54
P55
P56
P57
P60
P61
D7532 MA165
D7504 MA165 (SYS 2)
D7533 MA165
D7507 MA165 (CH 2)
D7534 MA165
D7510 MA165 (BH 2)
D7535 MA165
D7530 MA165 (TU/CAM)
D7511 MA165 (AV)
D7513 MA165 (CH ACT)
D7516 MA165 (TAPE 1)
D7517 MA165 (TAPE 2)
D7537 MA165
D7538 MA165
D7539 MA165
D7540 MA165
D7541 MA165
R7554 1800
R7553 180C
R7552 180C
R7527 1800
P44
P45
P46
P47
P7505
P43
P51
P50
P40
P60
P52
P41
P56
P61
P55
P42
P53
P44
P57
P7504
REG 5V
LINE Ⓗ
EDIT Ⓗ
SOFT Ⓗ
P44
P53
PICTURE
GND
ATR. OFF Ⓛ
P6501
SW6519 (ON UP)
SW6518 (ON DOWN)
SW6521 (OFF UP)
SW6520 (OFF DOWN)
SW6503 (PRESET)
SW6508 (BAND/AFC/VPS)
SW6509 (CLEAR)
SW6527 (STOP)
SW6515 (EJECT)
SW6512 (REW)
SW6514 (FF)
SW6526 (STILL)
SW6528 (REC)
SW6524 (A-DUB)
SW6513 (PLAY)
SW6525 (INSERT)
SW6523 (RESET)
SW6511 (T-SET)
SW6510 (SP/LP)
SW6517 (CH UP)
SW6516 (CH DOWN)
SW6522 (CLOCK/COUNT)
SW6502 (CLOCK)
SW6504 (PROG/CHECK)
SW6507 (NEXT)
SW6506 (SET UP)
SW6505 (SET DOWN)
SW6502 ~ SW6528 EVQ11404M or EVQ71404M × 27
KEY BOARD SW C.B.A. (VEP06569C)
POWER
SW6203 EVQ11407K
INPUT SELECT SW6202 VSS0236 LINE/TUNER AV
DIGITAL TRACKING SW6204 VSS0236 ON OFF
SOFT/OFF /EDIT SW6201 VSS0187 ON OFF SOFT
PICTURE VR3004 20KB
POWER D6201 LN28RCPP
R6201 180
R6203 1K
R6204 5600
D6203 MA165
R6205 1K
D6202 MA165
P6201
REG 5V
LINE Ⓗ
EDIT Ⓗ
SOFT Ⓗ
P54
P43
PICTURE
GND
ATR OFF Ⓛ
PP6201
MIC REG
MIC IN
MIC GND
MIC IN Ⓗ
P6202 (TO AUDIO)
MIC IN P4003-1
MIC GND P4003-2
MIC IN Ⓗ P4003-3
MIC 12V P4003-4
OPERATION C.B.A. (VEP06568C)
PS4309
MIC REG
MIC IN
MIC GND
MIC IN Ⓗ
R4309 1500
C4303 16V 47
R4305 10K
R4303 15K
Q4301 2SC2405 (AMP)
Q4302 2SA1034 (AMP)
C4304 50V 1
R4307 10K
C4301 16V 10
R4302 100
R4304 100K
R4301 4700
R4306 10K
R4308 330
C4302 16V 47
J4301 VJJ0214
MIC JACK
MIC JACK C.B.A. (VEP00N27A)
D4
D3
D2
D1
R7503 220
R7501 220
R7532 3300
R7533 1K
C7513 56P
R7511 3300
R7508 10K
R7509 10K
R7510 10K
Q7501 2SD601 (POWER ON : ON)
R7514 1K
C7509 0.1
R7549 3300
B3
B2
B1
V1
POWER VOLTAGE DET
IC7504 MN1280S
QR7501 UN2213 (INV.)
47K
R7548 3300
C2
C1
A(S)
A(L)
SPECIAL-PCLR CH
VBT
VMM
IC7502 MN12261
C3
GND
OUT
VL
U
AFC DEF
VSS
C7508 0.1
R7512 47K
R7513 22K
QR7502 UN2212 (POWER ON : ON)
22K
D7556 LN38GCPL AUTO TRACK
D7555 LN28RCPL INSERT
D7554 LN28RCPL A. DUB
R7550 180
R7544 180
R7540 180
QR7525 UN2216 (LED DRIVE)
R7531 3300
P7502 (TO CH SELECT)
15 FS CS P7402-1
14 FS DATA P7402-2
13 FS CLOCK P7402-3
12 P7402-4
11 SYNC Ⓛ P7402-5
10 A DEF (S) P7402-6
9 GND P7402-7
8 AFC (S) P7402-8
7 A TRACK P7402-9
6 AUDIO DUB P7402-10
5 INS LED P7402-11
4 LINE Ⓛ P7402-12
3 TIMER LNS P7402-13
2 TIMER TLK P7402-14
1 TIMER CLK P7402-15
1800
1800
1800
1800

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

6 7 8 9 10 11 12 13 14 15 16

3-28. TIMER C.B.A. (VEP07533B: NV-L28EG) & OPERATION C.B.A. (VEP06566C: NV-L28EG)


IR RECEIVER C.B.A. (VEP06552A)
KEY BOARD SW C.B.A. (VE
TIMER C.B.A. (VEP07533B)
IC6701
C6702
C6703
C6701
C6704
R6703
R6701
R6702
D6701
P6501
SW6514
FF
SW6513
PLAY
SW6512
REW
SW6528
REC
SW6527
STOP
SW6526
STILL
P7502
P7501
IC7502
IC7501
TP7519
TP7501
TP7518
QR7525
QR7501
QR7502
Q7501
X7502
X7501
TIMER CLOCK
INSERT
A.DUB
AUTO TRACK
D7555
D7554
D7556
D7501
D7541
D7539
D7540
D7532
D7537
D7535
D7516
D7517
DP7501
L7501
P7505
R7533
R7561
R7549
R7531
R7511
R7512
R7546
R7532
R7503
R7501
R7502
R7562
R7534
R7544
R7510
R7513
R7514
R7530
R7509
R7508
R7553
R7554
R7552
R7540
R7550
R7555
R7538
R7535
R7504
R7525
R7524
R7523
R7505
C7503
C7504
C7513
C7501
C7502
C7551
C7508
C7509
C7506
C7512
C7505
C7507
C7525
C7511
C7510
A
B
C
D
1
2
3
4
5
6
7
8

TIMER C.B.A. & OPERATION C.B.A.

Transistor	
Q4301	C-13
Q4302	C-13
Q7501	B-6

Transistor & Resistor	
QR7501	C-2
QR7502	B-5
QR7525	C-2

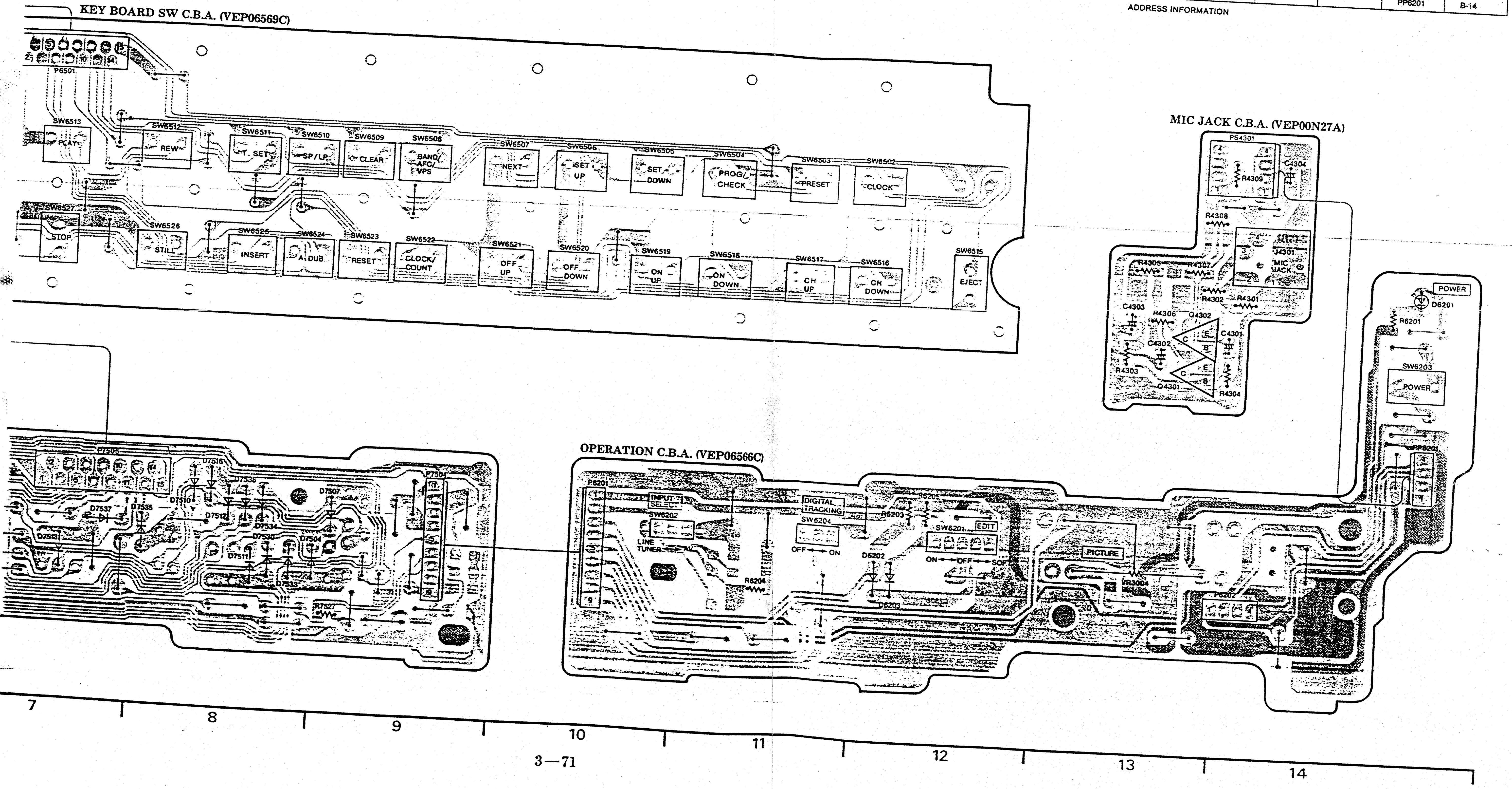
Integrated Circuit	
IC6701	D-5
IC7501	B-2
IC7502	C-5
IC7503	B-2
IC7504	C-3

Test Point	
TP7501	B-5
TP7517	C-1
TP7518	B-5
TP7519	C-1

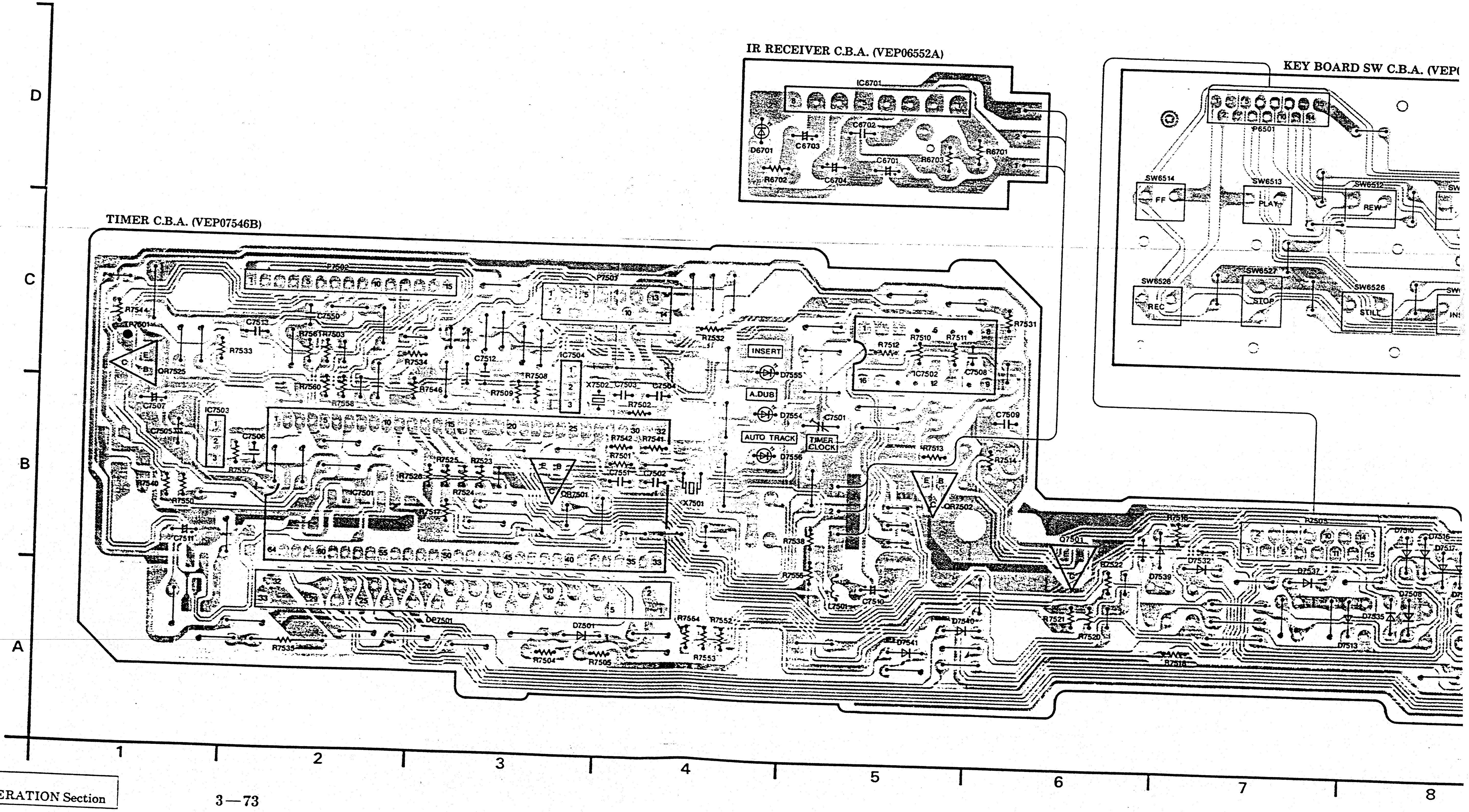
Adjustment	
C7501	C-1
VR3004	A-13

Connector	
P6201	B-10
P6202	A-14
P6501	D-7
P7501	C-3
P7502	C-2
P7504	B-9
P7505	B-7
PS4301	D-14
PP6201	B-14

ADDRESS INFORMATION


KEY BOARD SW C.B.A. (VEP06569C)
P6501
SW6513 PLAY
SW6512 REW
SW6511 T. SET
SW6510 SP/LP
SW6509 CLEAR
SW6508 BAND/AFC/VPS
SW6507 NEXT
SW6506 SET UP
SW6505 SET DOWN
SW6504 PROG/CHECK
SW6503 PRESET
SW6502 CLOCK
SW6527 STOP
SW6526 STILL
SW6525 INSERT
SW6524 A.DUB
SW6523 RESET
SW6522 CLOCK/COUNT
SW6521 OFF UP
SW6520 OFF DOWN
SW6519 ON UP
SW6518 ON DOWN
SW6517 CH UP
SW6516 CH DOWN
SW6515 EJECT
MIC JACK C.B.A. (VEP00N27A)
PS4301
C4304
R4309
R4308
R4305
R4307
J4301
MIC JACK
R4302
R4301
C4303
R4306
Q4302
C4301
C4302
R4303
Q4301
R4304
POWER
D6201
R6201
SW6203
POWER
PP6201
P7505
D7516
D7538
D7507
P7504
D7510
D7537
D7535
D7512
D7534
D7513
D7530
D7504
D7511
D7533
R7527
OPERATION C.B.A. (VEP06566C)
P6201
INPUT SELECT
SW6202
LINE
TUNER
DIGITAL TRACKING
SW6204
OFF ON
R6205
R6203
SW6201
EDIT
ON OFF SOFT
D6202
D6203
R6204
PICTURE
VR3004
P6202
7
8
9
10
11
12
13
14

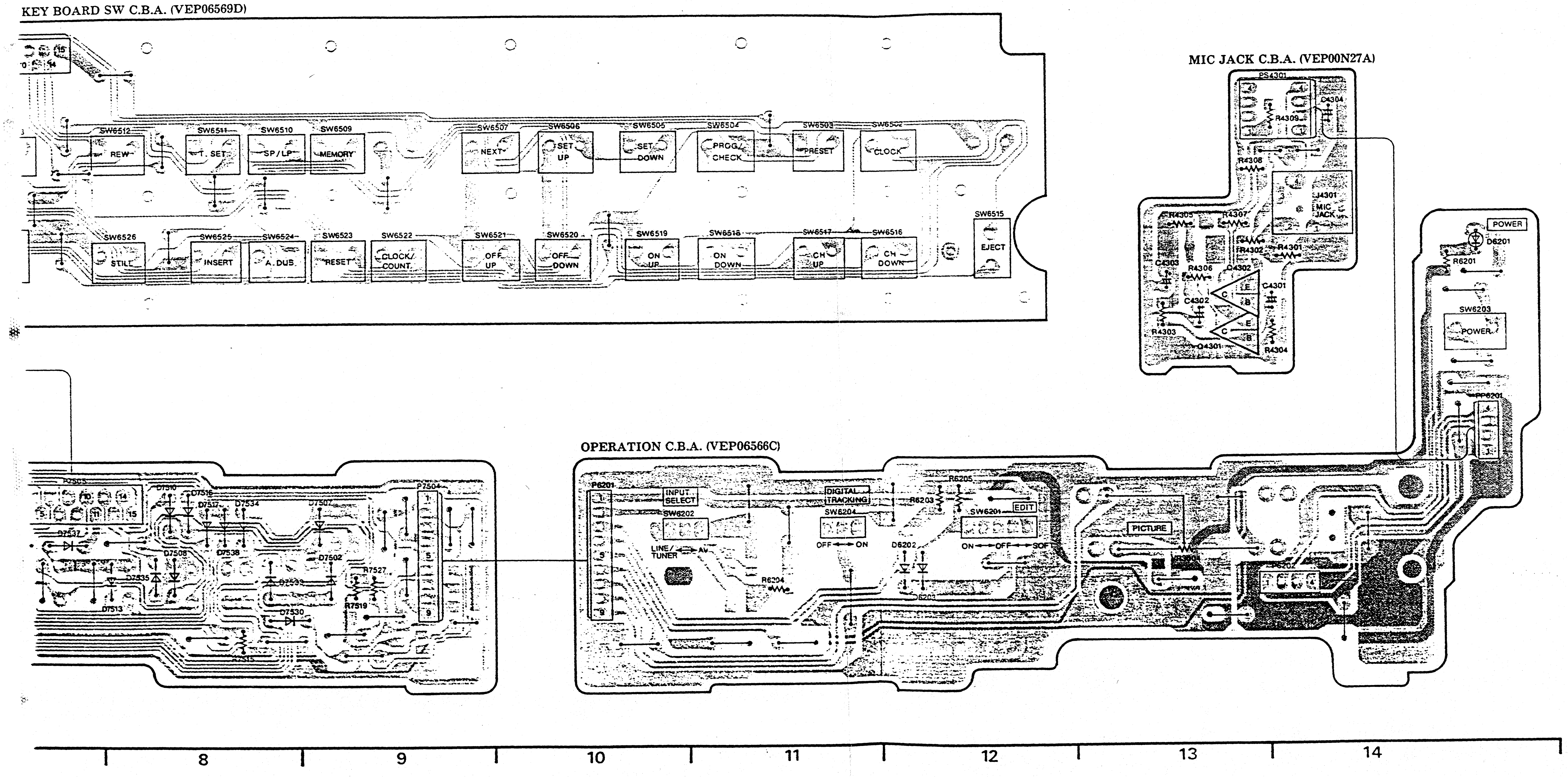
3-29. TIMER C.B.A. (VEP07546B: NV-L28B) & OPERATION C.B.A. (VEP06566C: NV-L28B)


IR RECEIVER C.B.A. (VEP06552A)
KEY BOARD SW C.B.A.
TIMER C.B.A. (VEP07546B)
IC6701
D6701
C6703
C6702
C6701
C6704
R6702
R6703
R6701
P6501
SW6514
FF
SW6513
PLAY
SW6512
REW
SW6528
REC
SW6527
STOP
SW6526
STILL
P7502
P7503
P7505
IC7501
IC7502
IC7503
IC7504
QR7501
QR7502
QR7525
Q7501
X7501
X7502
L7501
INSERT
D7555
A.DUB
D7554
AUTO TRACK
D7556
TIMER CLOCK
C7501
C7502
C7503
C7504
C7505
C7506
C7507
C7508
C7509
C7510
C7511
C7512
C7513
C7550
C7551
D7501
D7508
D7510
D7513
D7516
D7517
D7532
D7535
D7537
D7539
D7540
D7541
R7501
R7502
R7503
R7504
R7505
R7508
R7509
R7510
R7511
R7512
R7513
R7514
R7515
R7516
R7517
R7520
R7521
R7522
R7523
R7524
R7525
R7526
R7531
R7532
R7533
R7534
R7535
R7538
R7540
R7541
R7542
R7544
R7546
R7550
R7552
R7553
R7554
R7555
R7557
R7558
R7560
R7561
A
B
C
D
1
2
3
4
5
6
7
8

Back Page:
TIMER & OPERATION Section

TIMER C.B.A. & OPERATION C.B.A.					
Transistor		**Integrated Circuit**		**Connector**	
Q4301	C-13	IC6701	D-5	P6201	B-10
Q4302	C-13	IC7501	B-2	P6202	A-14
Q7501	B-6	IC7502	C-5	P6501	D-7
Transistor & Resistor		IC7503	B-1	P7501	C-3
QR7501	B-3	IC7504	C-3	P7502	C-2
QR7502	B-5	**Test Point**		P7504	B-9
QR7525	C-1	TP7501	C-1	P7505	B-7
		Adjustment		PS4301	D-13
		C7501	B-5	PP6201	B-14
		VR3004	B-13		

ADDRESS INFORMATION


KEY BOARD SW C.B.A. (VEP06569D)

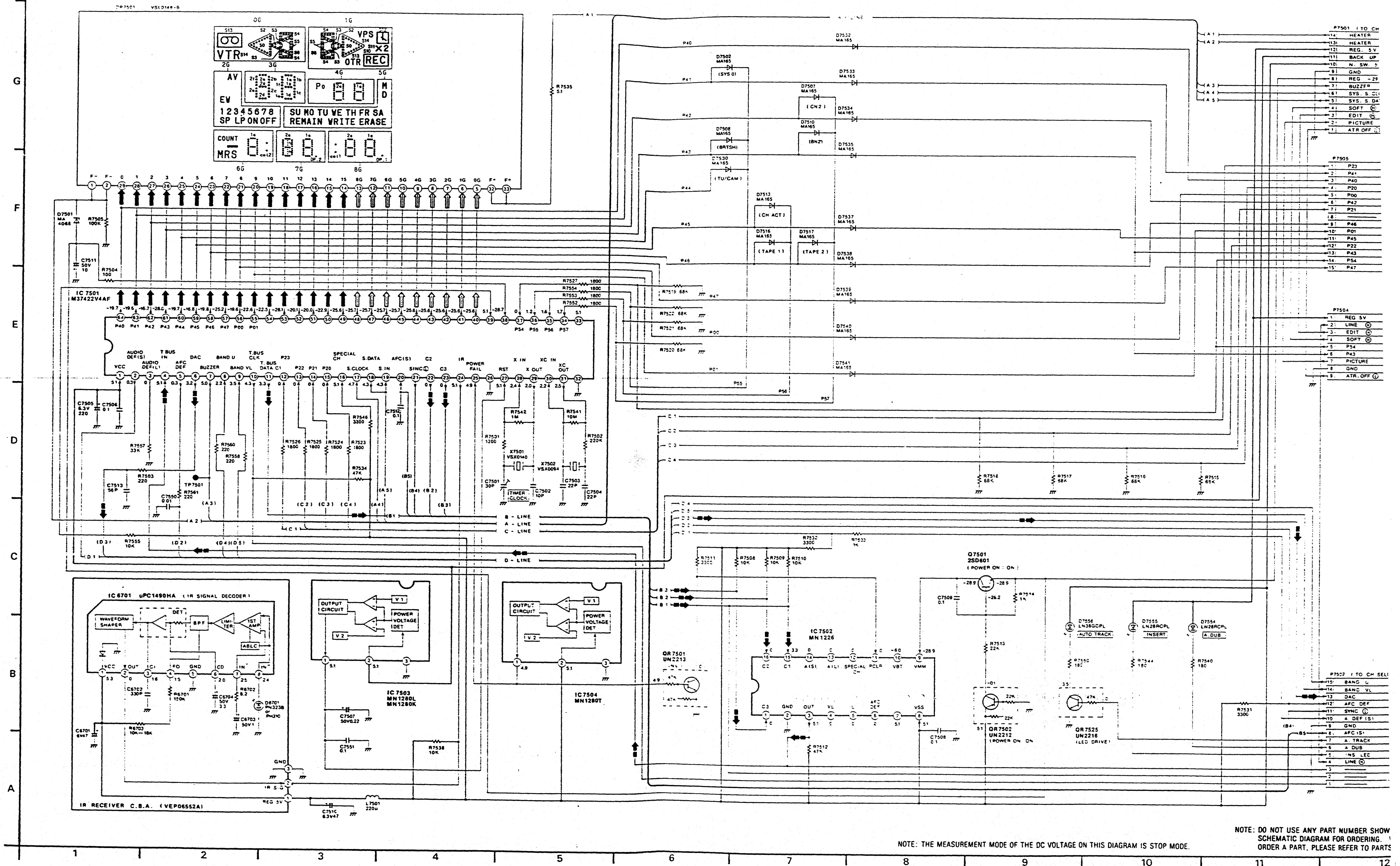
MIC JACK C.B.A. (VEP00N27A)

OPERATION C.B.A. (VEP06566C)

SW6512
REW
SW6511
T. SET
SW6510
SP/LP
SW6509
MEMORY
SW6507
NEXT
SW6506
SET UP
SW6505
SET DOWN
SW6504
PROG/ CHECK
SW6503
PRESET
SW6502
CLOCK
SW6515
EJECT
SW6526
STILL
SW6525
INSERT
SW6524
A. DUB
SW6523
RESET
SW6522
CLOCK/ COUNT
SW6521
OFF UP
SW6520
OFF DOWN
SW6519
ON UP
SW6518
ON DOWN
SW6517
CH UP
SW6516
CH DOWN
PS4301
C4304
R4309
R4308
J4301
MIC JACK
R4305
R4307
R4302
R4301
C4303
R4306
Q4302
C4301
C4302
R4303
Q4301
R4304
C
E
B
POWER
D6201
R6201
SW6203
POWER
PP6201
P7505
D7510
D7516
D7517
D7534
D7507
P7504
D7537
D7508
D7538
D7502
D7535
D7533
R7527
D7513
D7530
R7519
R7515
P6201
INPUT SELECT
SW6202
LINE/ TUNER
AV
DIGITAL TRACKING
SW6204
OFF
ON
R6205
R6203
EDIT
SW6201
ON
OFF
SOFT
D6202
D6203
R6204
PICTURE
VR3004
P6202
8
9
10
11
12
13
14

3-30. TIMER & OPERATION SCHEMATIC DIAGRAM (NV-L28B)

SEGMENT CONTROL SIGNAL GRID CONTR(

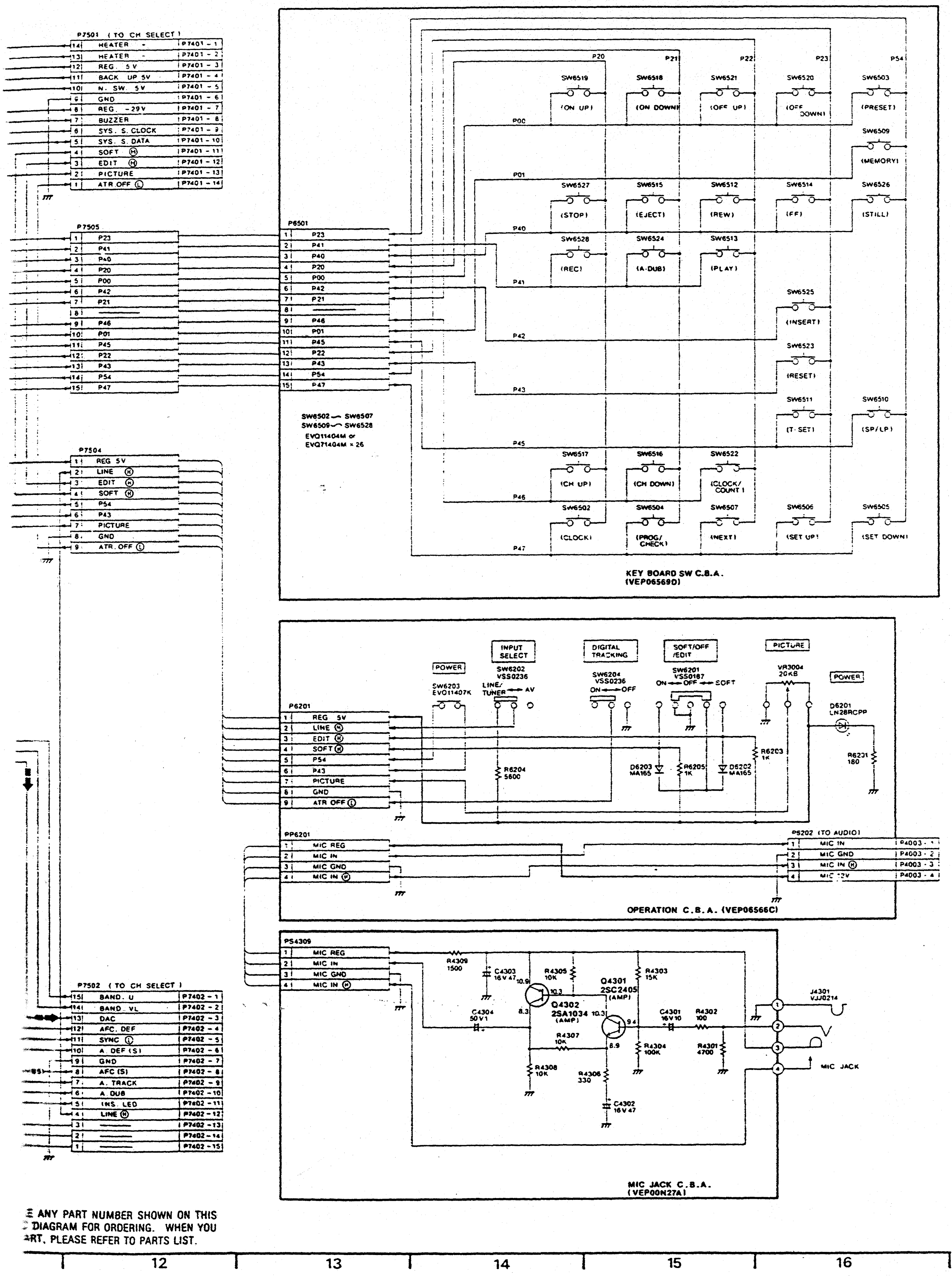

DP7501 VSL0149-6
VTR
VPS
OTR
REC
AV
EW
Po
12345678
SU MO TU WE TH FR SA
SP LP ON OFF
REMAIN WRITE ERASE
COUNT
MRS
IC 7501
M37422V4AF
VCC
AUDIO DEF(S)
AUDIO DEF(L)
T.BUS IN
AFC DEF
DAC
BUZZER
BAND U
BAND VL
T.BUS CLK
T.BUS DATA C1
P23
P22
P21
P20
SPECIAL CH
S.CLOCK
S.DATA
S.IN
AFC(S)
SINC
C2
C3
IR
POWER FAIL
RST
X IN
X OUT
XC IN
XC OUT
X7501 VSX0140
X7502 VSX0094
TIMER CLOCK
TP7501
D7501 MA 4068
D7502 MA165 (SYS 0)
D7508 MA165 (BRTSH)
D7530 MA165 (TU/CAM)
D7507 MA165 (CN2)
D7510 MA165 (BN2)
D7513 MA165 (CH ACT)
D7516 MA165 (TAPE 1)
D7517 MA165 (TAPE 2)
A - LINE
B - LINE
C - LINE
D - LINE
IC 6701 uPC1490HA (IR SIGNAL DECODER)
WAVEFORM SHAPER
DET
BPF
LIMITER
1ST AMP
ABLC
D6701 PN323B or PN310
IR RECEIVER C.B.A. (VEP06552A)
GND
IR S.D
REG 5V
IC 7503 MN1280L MN1280K
IC 7504 MN1280T
OUTPUT CIRCUIT
POWER VOLTAGE DET
Q7501 2SD601 (POWER ON : ON)
QR7501 UN2213
IC 7502 MN1226
QR7502 UN2212 (POWER ON : ON)
QR7525 UN2216 (LED DRIVE)
D7556 LN38GCPL AUTO TRACK
D7555 LN28RCPL INSERT
D7554 LN28RCPL A.DUB
L7501 220u
P7501 (TO CH
HEATER
HEATER
REG. 5V
BACK UP
N. SW.
GND
REG -29
BUZZER
SYS. S. CL
SYS. S. DA
SOFT
EDIT
PICTURE
ATR OFF
P7505
P7504
REG 5V
LINE
EDIT
SOFT
P54
P43
PICTURE
GND
ATR. OFF
P7502 (TO CH SEL
BAND U
BAND VL
DAC
AFC DEF
SYNC
A. DEF (S)
GND
AFC (S)
A. TRACK
A. DUB
INS LED
LINE
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOW
SCHEMATIC DIAGRAM FOR ORDERING.
ORDER A PART, PLEASE REFER TO PARTS

RID CONTROL SIGNAL

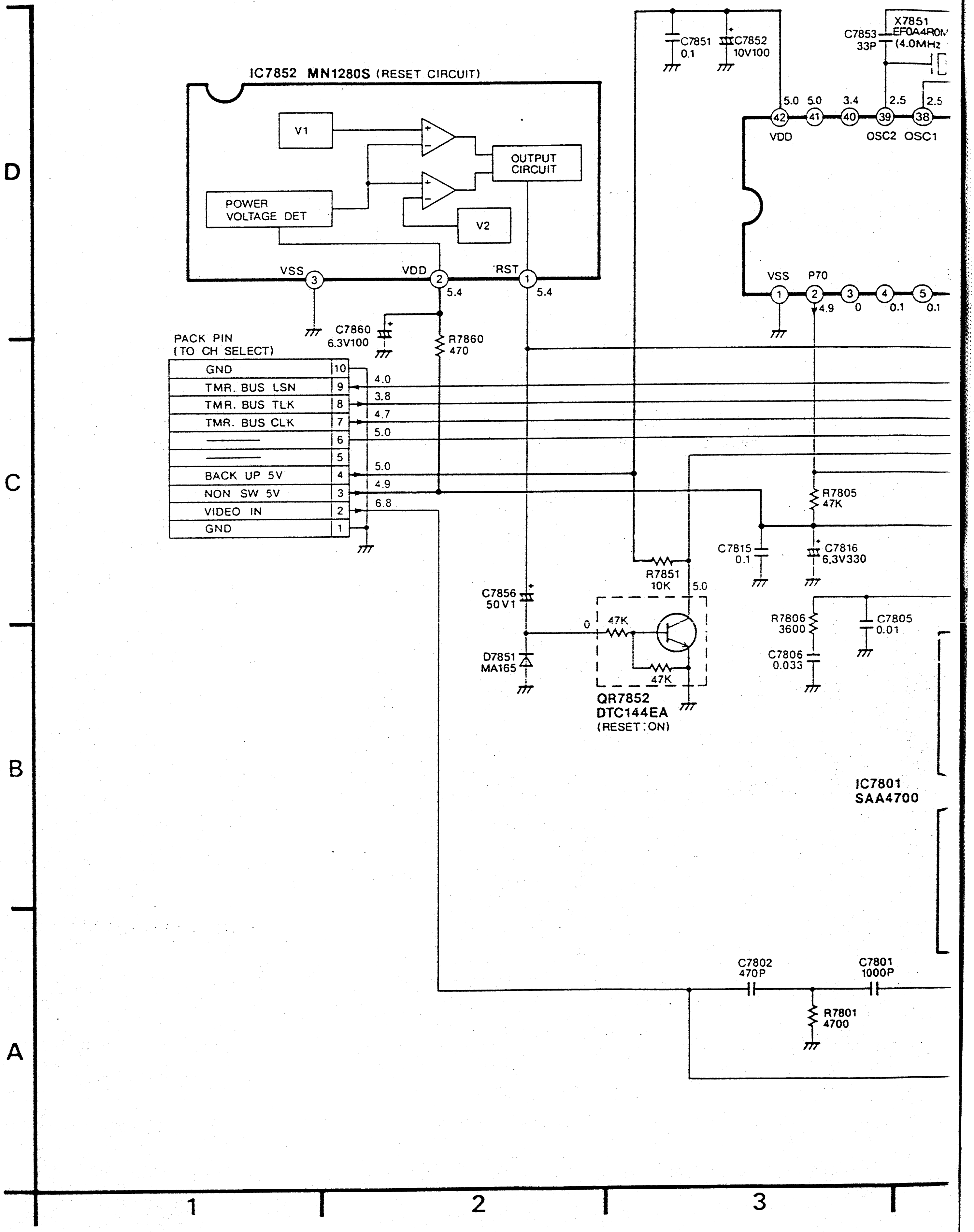
TUNE CONTROL SIGNAL

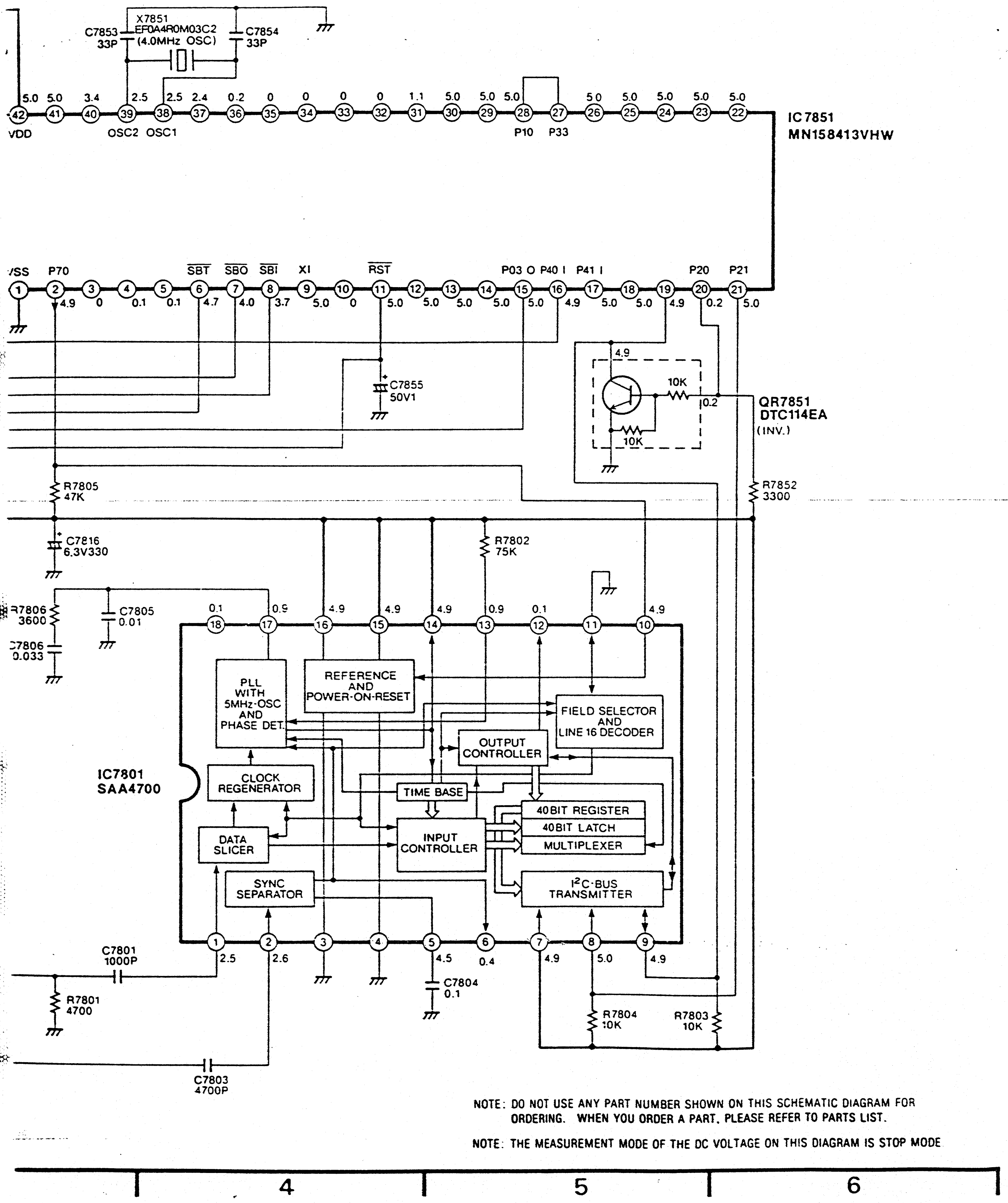

P7501 (TO CH SELECT)
14 HEATER P7401-1
13 HEATER P7401-2
12 REG. 5V P7401-3
11 BACK UP 5V P7401-4
10 N. SW. 5V P7401-5
9 GND P7401-6
8 REG. -29V P7401-7
7 BUZZER P7401-8
6 SYS. S. CLOCK P7401-9
5 SYS. S. DATA P7401-10
4 SOFT Ⓗ P7401-11
3 EDIT Ⓗ P7401-12
2 PICTURE P7401-13
1 ATR OFF Ⓛ P7401-14
P7505
P6501
1 P23
2 P41
3 P40
4 P20
5 P00
6 P42
7 P21
8
9 P46
10 P01
11 P45
12 P22
13 P43
14 P54
15 P47
P20 P21 P22 P23 P54
SW6519 (ON UP)
SW6518 (ON DOWN)
SW6521 (OFF UP)
SW6520 (OFF DOWN)
SW6503 (PRESET)
SW6509 (MEMORY)
P00
P01
SW6527 (STOP)
SW6515 (EJECT)
SW6512 (REW)
SW6514 (FF)
SW6526 (STILL)
P40
SW6528 (REC)
SW6524 (A-DUB)
SW6513 (PLAY)
P41
SW6525 (INSERT)
P42
SW6523 (RESET)
P43
SW6511 (T-SET)
SW6510 (SP/LP)
P45
SW6517 (CH UP)
SW6516 (CH DOWN)
SW6522 (CLOCK/COUNT)
P46
SW6502 (CLOCK)
SW6504 (PROG/CHECK)
SW6507 (NEXT)
SW6506 (SET UP)
SW6505 (SET DOWN)
P47
SW6502 ~ SW6507
SW6509 ~ SW6528
EVQ11404M or
EVQ71404M × 26
KEY BOARD SW C.B.A.
(VEP06569D)
P7504
1 REG 5V
2 LINE Ⓗ
3 EDIT Ⓗ
4 SOFT Ⓗ
5 P54
6 P43
7 PICTURE
8 GND
9 ATR. OFF Ⓛ
POWER
SW6203 EVQ11407K
INPUT SELECT
SW6202 VSS0236
LINE/TUNER ← → AV
DIGITAL TRACKING
SW6204 VSS0236
ON ← → OFF
SOFT/OFF /EDIT
SW6201 VSS0187
ON ← OFF → SOFT
PICTURE
VR3004 20KB
POWER
D6201 LN28RCPP
R6231 180
P6201
1 REG 5V
2 LINE Ⓗ
3 EDIT Ⓗ
4 SOFT Ⓗ
5 P54
6 P43
7 PICTURE
8 GND
9 ATR OFF Ⓛ
R6204 5600
D6203 MA165
R6205 1K
D6202 MA165
R6203 1K
PP6201
1 MIC REG
2 MIC IN
3 MIC GND
4 MIC IN Ⓗ
PS202 (TO AUDIO)
1 MIC IN P4003-1
2 MIC GND P4003-2
3 MIC IN Ⓗ P4003-3
4 MIC 12V P4003-4
OPERATION C.B.A. (VEP06566C)
PS4309
1 MIC REG
2 MIC IN
3 MIC GND
4 MIC IN Ⓗ
R4309 1500
C4303 16V 47
10.9
R4305 10K
10.3
Q4301 2SC2405 (AMP)
R4303 15K
C4304 50V 1
8.3
Q4302 2SA1034 (AMP)
10.3
9.4
R4307 10K
8.9
C4301 16V 10
R4302 100
R4304 100K
R4301 4700
R4308 10K
R4306 330
C4302 16V 47
J4301 VJJ0214
MIC JACK
MIC JACK C.B.A.
(VEP00N27A)
P7502 (TO CH SELECT)
15 BAND. U P7402-1
14 BAND. VL P7402-2
13 DAC P7402-3
12 AFC. DEF P7402-4
11 SYNC Ⓛ P7402-5
10 A. DEF (S) P7402-6
9 GND P7402-7
8 AFC (S) P7402-8
7 A. TRACK P7402-9
6 A. DUB P7402-10
5 INS. LED P7402-11
4 LINE Ⓗ P7402-12
3 P7402-13
2 P7402-14
1 P7402-15
12
13
14
15
16

E ANY PART NUMBER SHOWN ON THIS
DIAGRAM FOR ORDERING. WHEN YOU
ART, PLEASE REFER TO PARTS LIST.

Next Page:
VPS PACK Section

3-31. VPS PACK SCHEMATIC DIAGRAM (NV-L28EG)


D
C
B
A
1
2
3
IC7852 MN1280S (RESET CIRCUIT)
V1
V2
POWER VOLTAGE DET
OUTPUT CIRCUIT
VSS
VDD
RST
5.4
5.4
C7860 6.3V100
R7860 470
PACK PIN (TO CH SELECT)
GND 10
TMR. BUS LSN 9
TMR. BUS TLK 8
TMR. BUS CLK 7
6
5
BACK UP 5V 4
NON SW 5V 3
VIDEO IN 2
GND 1
4.0
3.8
4.7
5.0
5.0
4.9
6.8
C7851 0.1
C7852 10V100
C7853 33P
X7851 EF0A4R0M
(4.0MHz
5.0
5.0
3.4
2.5
2.5
VDD
OSC2
OSC1
VSS
P70
4.9
0
0.1
0.1
R7805 47K
C7815 0.1
C7816 6.3V330
R7851 10K
5.0
C7856 50V1
D7851 MA165
0
47K
47K
QR7852 DTC144EA (RESET : ON)
R7806 3600
C7805 0.01
C7806 0.033
IC7801 SAA4700
C7802 470P
C7801 1000P
R7801 4700


X7851
EF0A4R0M03C2
(4.0MHz OSC)
C7853 33P
C7854 33P
VDD
OSC2
OSC1
P10
P33
IC7851
MN158413VHW
VSS
P70
SBT
SBO
SBI
XI
RST
P03 O
P40 I
P41 I
P20
P21
C7855 50V1
QR7851
DTC114EA
(INV.)
10K
R7852 3300
R7805 47K
C7816 6.3V330
R7802 75K
R7806 3600
C7805 0.01
C7806 0.033
PLL WITH 5MHz-OSC AND PHASE DET.
REFERENCE AND POWER-ON-RESET
FIELD SELECTOR AND LINE 16 DECODER
OUTPUT CONTROLLER
IC7801
SAA4700
CLOCK REGENERATOR
TIME BASE
40BIT REGISTER
40BIT LATCH
MULTIPLEXER
DATA SLICER
INPUT CONTROLLER
SYNC SEPARATOR
I²C-BUS TRANSMITTER
C7801 1000P
R7801 4700
C7804 0.1
R7804 10K
R7803 10K
C7803 4700P
4
5
6

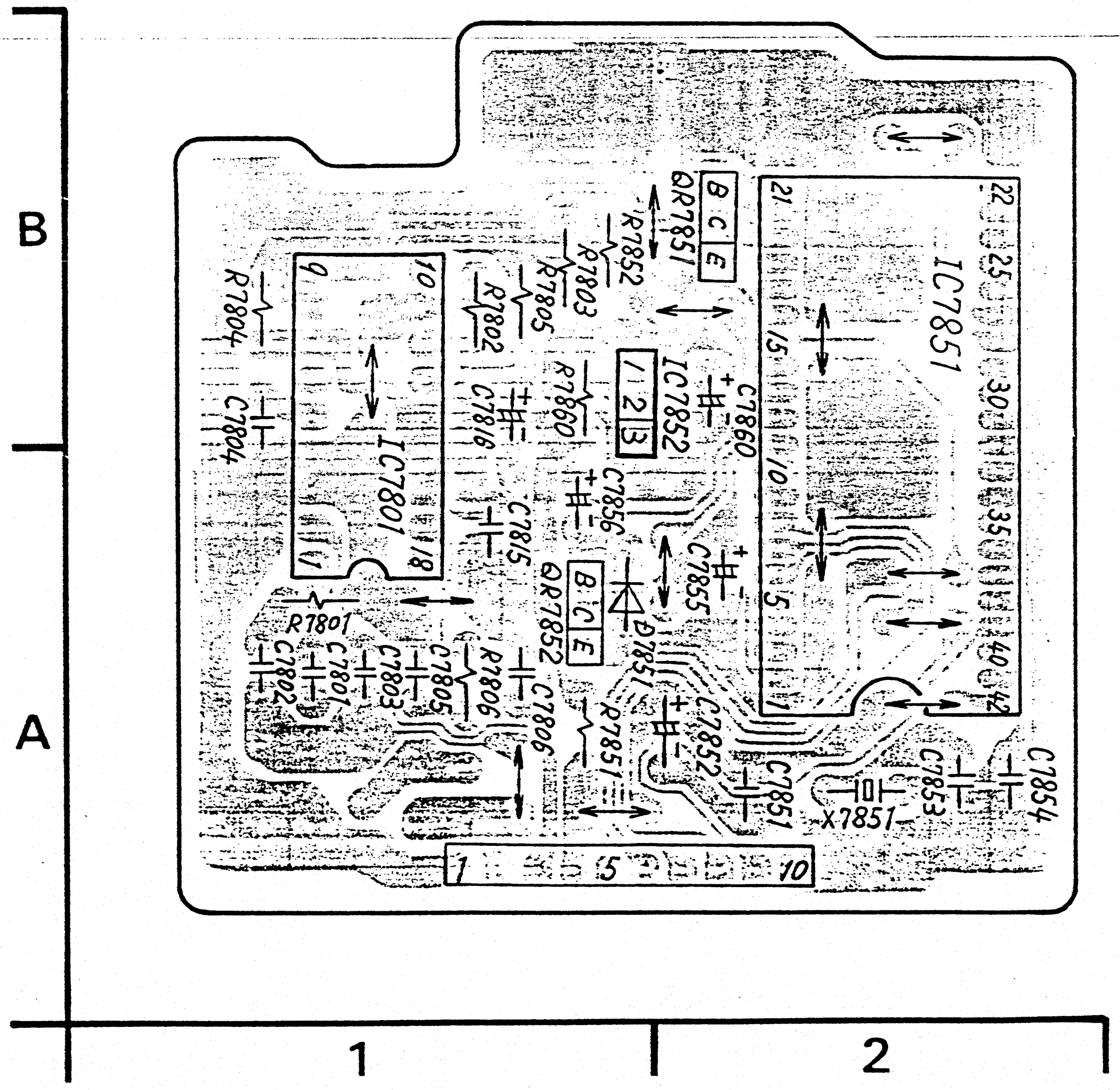
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE

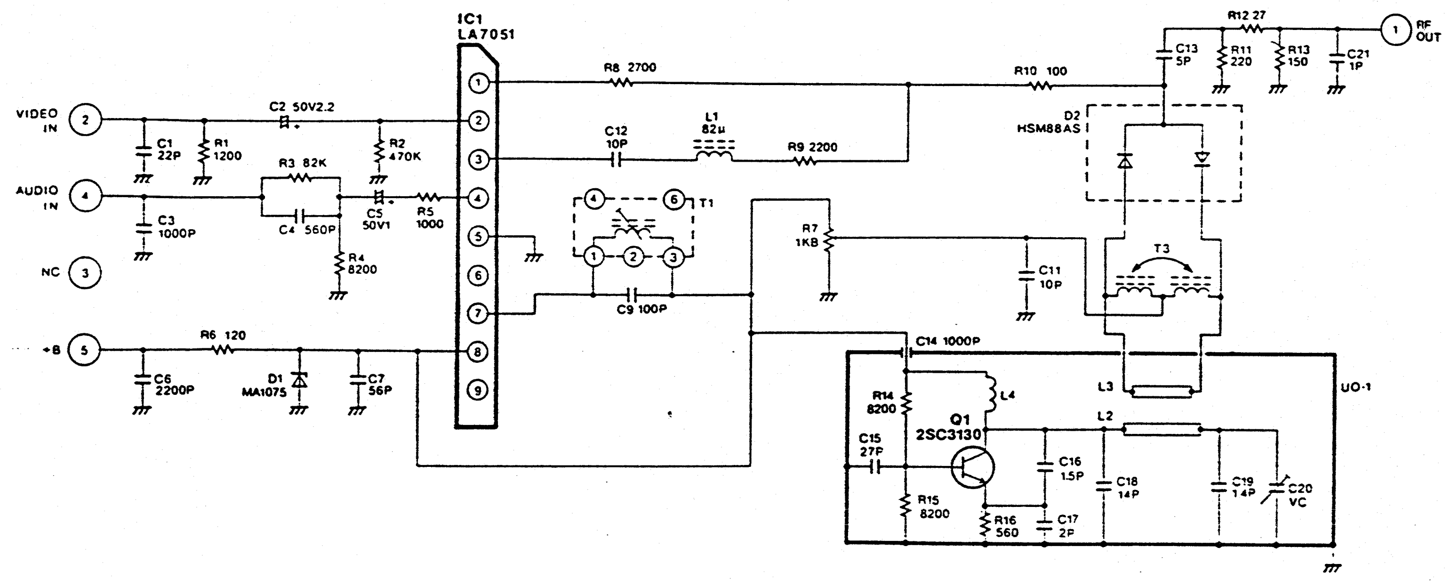
3-32. VPS PACK C.B.A. (VEP07538B: NV-L28EG)

VPS PACK C.B.A.	
Transistor & Resistor	
QR7851	B-2
QR7852	A-1
Integrated Circuit	
IC7801	A-1
IC7851	B-2
IC7852	B-2

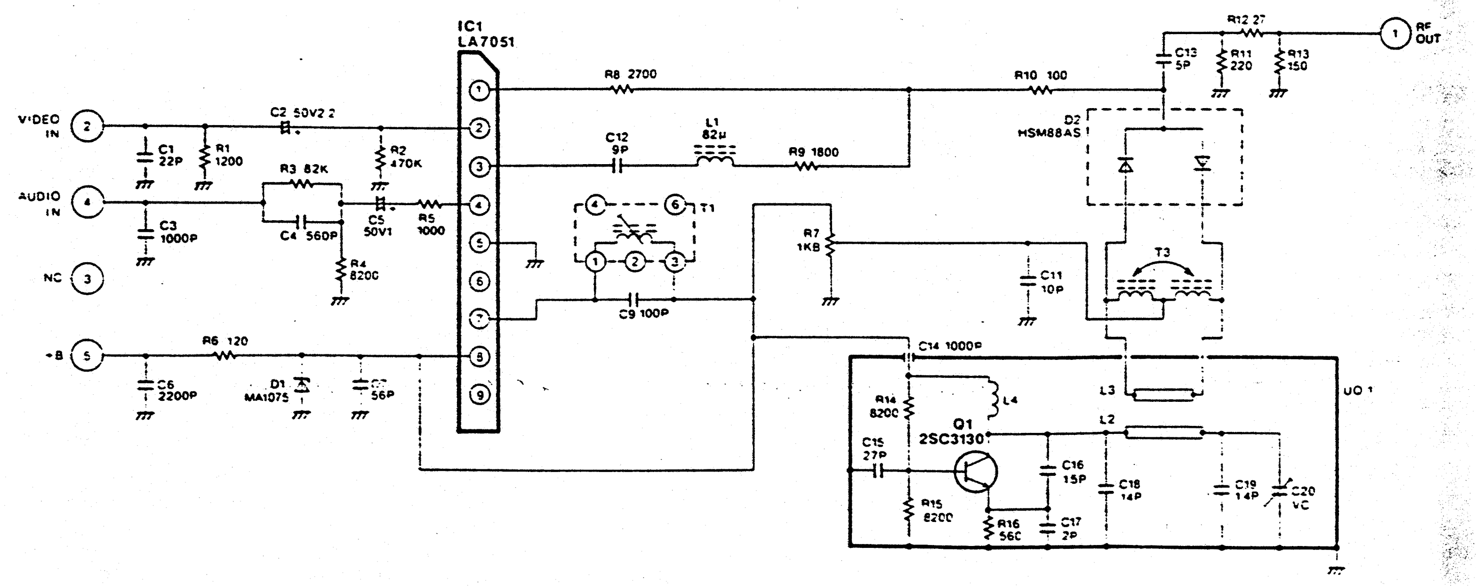
ADDRESS INFORMATION


B
A
1
2
IC7851
IC7801
IC7852
QR7851
QR7852
R7801
R7802
R7803
R7804
R7805
R7806
R7852
R7851
R7860
C7801
C7802
C7803
C7804
C7805
C7815
C7816
C7852
C7853
C7854
C7855
C7856
C7857
C7860
D7851
X7851
B C E

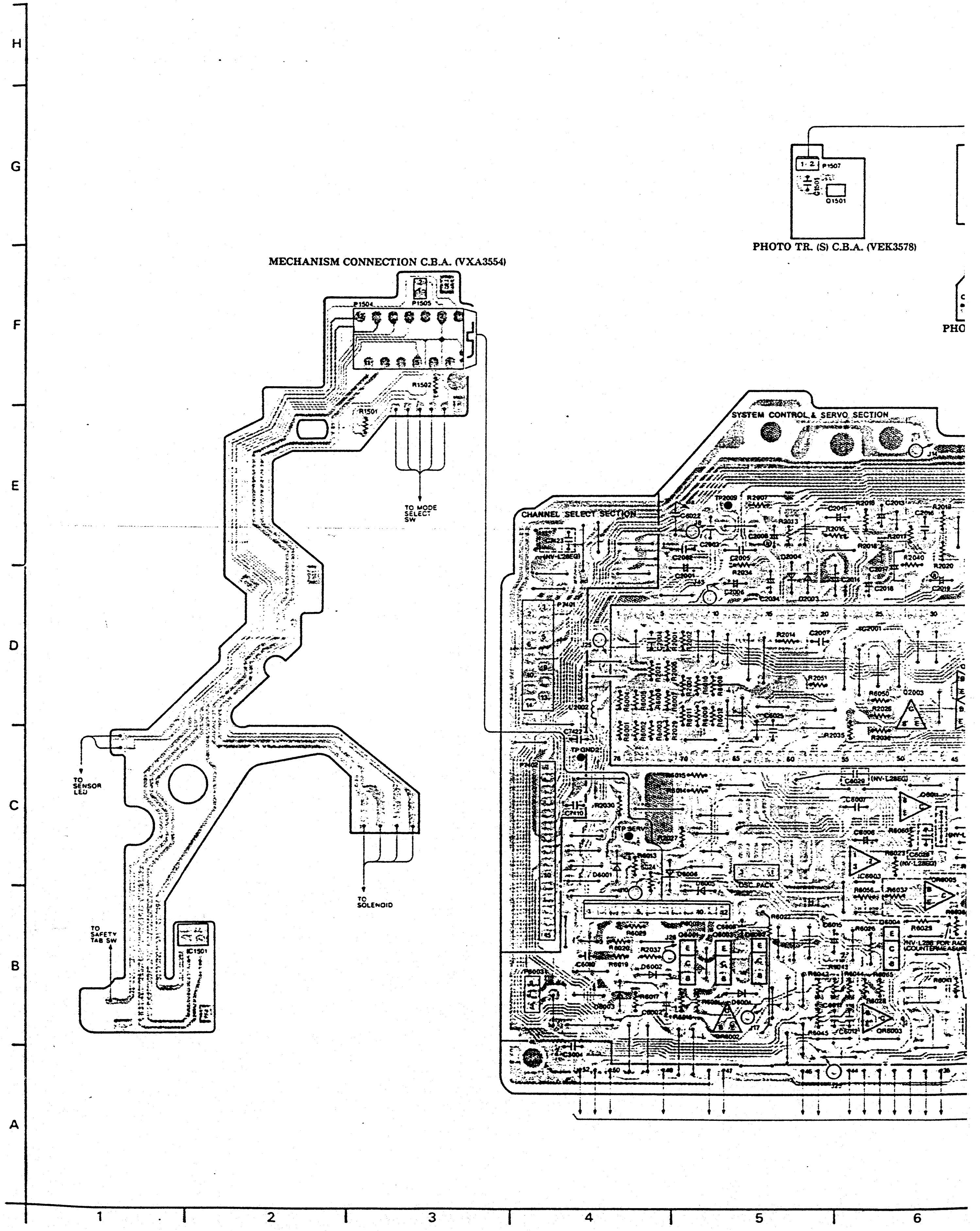
3-33. RF CONVERTER SCHEMATIC DIAGRAM (ENC17956: NV-L28EG)


IC1
LA7051
VIDEO IN ②
AUDIO IN ④
NC ③
+B ⑤
C1 22P
R1 1200
C2 50V2.2
R3 82K
R2 470K
C3 1000P
C4 560P
C5 50V1
R5 1000
R4 8200
R6 120
C6 2200P
D1 MA1075
C7 56P
R8 2700
C12 10P
L1 82μ
R9 2200
T1
C9 100P
R7 1KB
R10 100
D2 HSM88AS
C11 10P
T3
C13 5P
R11 220
R12 27
R13 150
C21 1P
① RF OUT
C14 1000P
R14 8200
L4
Q1 2SC3130
C15 27P
R15 8200
R16 560
C16 1.5P
C17 2P
L3
L2
C18 14P
C19 14P
C20 VC
UO-1

3-34. RF CONVERTER SCHEMATIC DIAGRAM (ENC17952A: NV-L28B)


IC1
LA7051
VIDEO IN ②
AUDIO IN ④
NC ③
+B ⑤
C1 22P
R1 1200
C2 50V2.2
R3 82K
R2 470K
C3 1000P
C4 560P
C5 50V1
R5 1000
R4 8200
R6 120
C6 2200P
D1 MA1075
C7 56P
R8 2700
C12 9P
L1 82μ
R9 1800
T1
C9 100P
R7 1KB
R10 100
D2 HSM88AS
C11 10P
T3
C13 5P
R11 220
R12 27
R13 150
① RF OUT
C14 1000P
R14 8200
L4
Q1 2SC3130
C15 27P
R15 8200
R16 560
C16 15P
C17 2P
L3
L2
C18 14P
C19 14P
C20 VC
UO-1

3-35. MAIN C.B.A. (VEP03588BC: NV-L28EG) (VEP03588BD: NV-L28B)


H
G
F
E
D
C
B
A
1
2
3
4
5
6
PHOTO TR. (S) C.B.A. (VEK3578)
P1507
Q1501
MECHANISM CONNECTION C.B.A. (VXA3554)
P1504
P1505
R1502
R1501
TO MODE SELECT SW
TO SENSOR LED
TO SOLENOID
TO SAFETY TAB SW
IC1501
SYSTEM CONTROL & SERVO SECTION
CHANNEL SELECT SECTION
IC2001
IC6003
OSC. PACK
TP GND2

: NV-L28B)

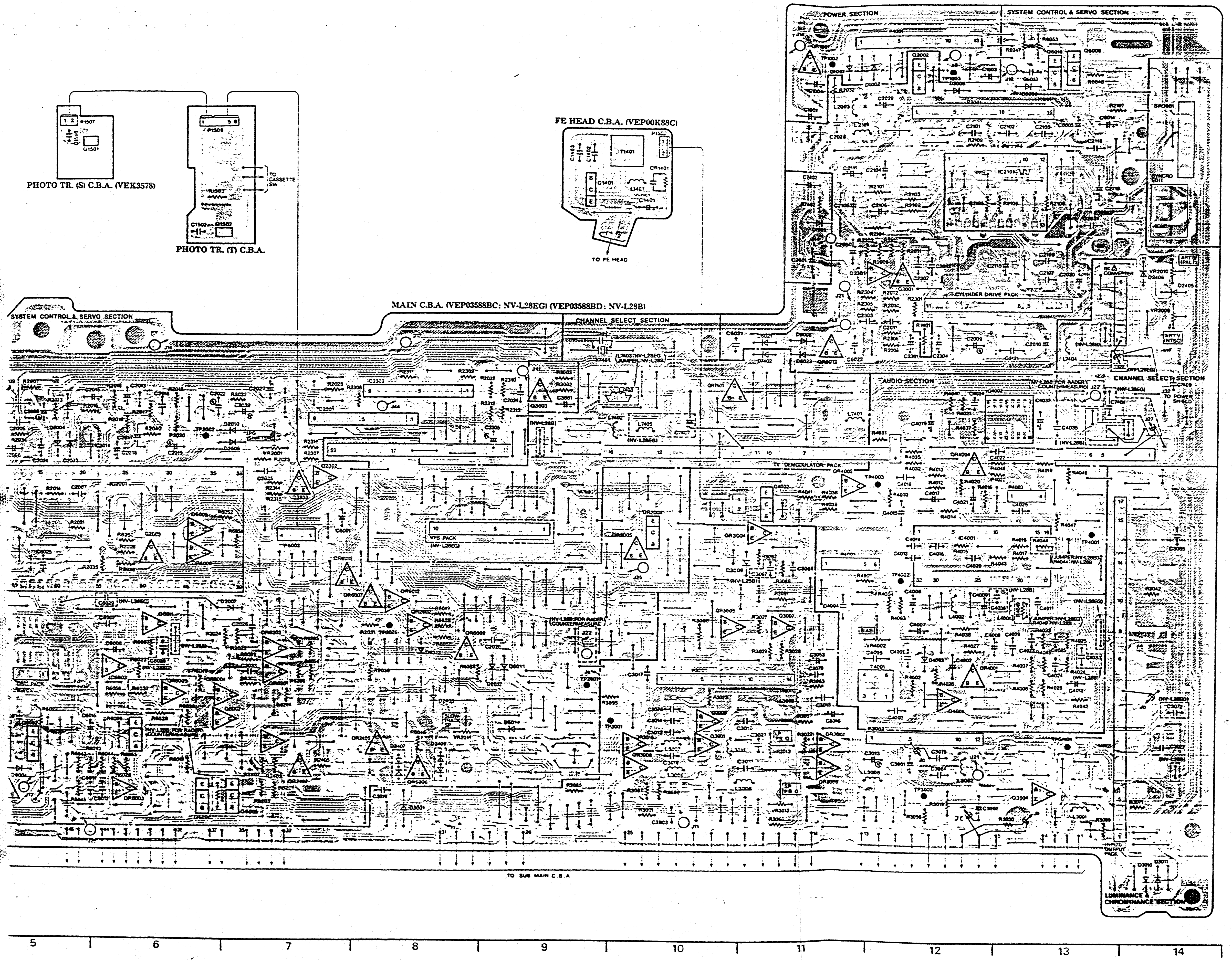


PHOTO TR. (S) C.B.A. (VEK3578)
PHOTO TR. (T) C.B.A.
TO CASSETTE SW
FE HEAD C.B.A. (VEP00K88C)
TO FE HEAD
MAIN C.B.A. (VEP03588BC: NV-L28EG) (VEP03588BD: NV-L28B)
POWER SECTION
SYSTEM CONTROL & SERVO SECTION
CHANNEL SELECT SECTION
AUDIO SECTION
CYLINDER DRIVE PACK
TV DEMODULATOR PACK
VPS PACK
LUMINANCE & CHROMINANCE SECTION
TO SUB MAIN C.B.A
5
6
7
8
9
10
11
12
13
14

MAIN C.B.A. ADDRESS INFORMATI

SYSTEM CONTROL & SERVO Section	
Transistor	
Q1501	G-6
Q1502	F-7
Q2001	F-12
Q2002	H-12
Q2003	C-6
Q2301	F-11
Q2302	D-7
Q2303	D-7
Q6001	B-5
Q6002	B-5
Q6003	B-5
Q6004	B-6
Q6005	B-7
Q6006	A-6
Q6007	B-7
Q6008	H-13
Q6009	D-6
Q6010	H-13
Q6011	C-6
Transistor & Resistor	
QR2002	C-8
QR2004	D-10
QR2005	D-10
QR2402	B-7
QR2403	B-7
QR2405	B-8
QR6002	B-5
QR6003	B-6
QR6004	B-7
QR6005	B-6
QR6006	B-8
QR6007	C-8
QR6008	D-6
QR6009	C-8
QR6011	D-7
QR6012	C-8
QR6013	E-11
QR6201	C-7
QR6202	C-7
Integrated Circuit	
IC1501	B-2
IC2001	D-6
IC2101	G-13
IC2301	E-7
IC2302	E-8
IC6003	C-6
Test Point	
TP2001	C-9
TP2002	E-6
TP2009	E-5
TP2026	C-8
TPSERV	C-4
TPGND2	C-4
Adjustment	
VR2001	D-7
VR2009	E-14
VR2010	F-14
VR2011	B-8
Connector	
P1504	F-3
P1505	F-3
P1507	G-5
P1508	G-6
P2001	G-12
P6001	B-5
P6002	D-7
P6003	B-4

ADDRESS INFORMATION

CHANNEL SELECT Section	
Transistor & Resistor	
QR7401	E-10
Connector	
P7401	D-4
P7402	C-4

ADDRESS INFORMATION

POWER Section	
Transistor & Resistor	
QR1001	H-11
Test Point	
TP1002	H-11
TP1003	G-12
TPGND1	B-13
Connector	
P1001	H-12

ADDRESS INFORMATION

LUMINANCE & CHROMINANCE Section	
Transistor	
Q3001	B-10
Q3003	E-9
Q3004	B-13
Q3006	B-10
Q3007	C-11
Transistor & Resistor	
QR3004	D-11
QR3005	C-10
QR3006	B-11
QR3007	B-11
QR3008	B-10
QR3010	B-10
Test Point	
TP3001	B-10
TP3002	B-12
Adjustment	
VR3012	B-11
VR3013	B-11
Connector	
P3001	C-10
P3002	B-12

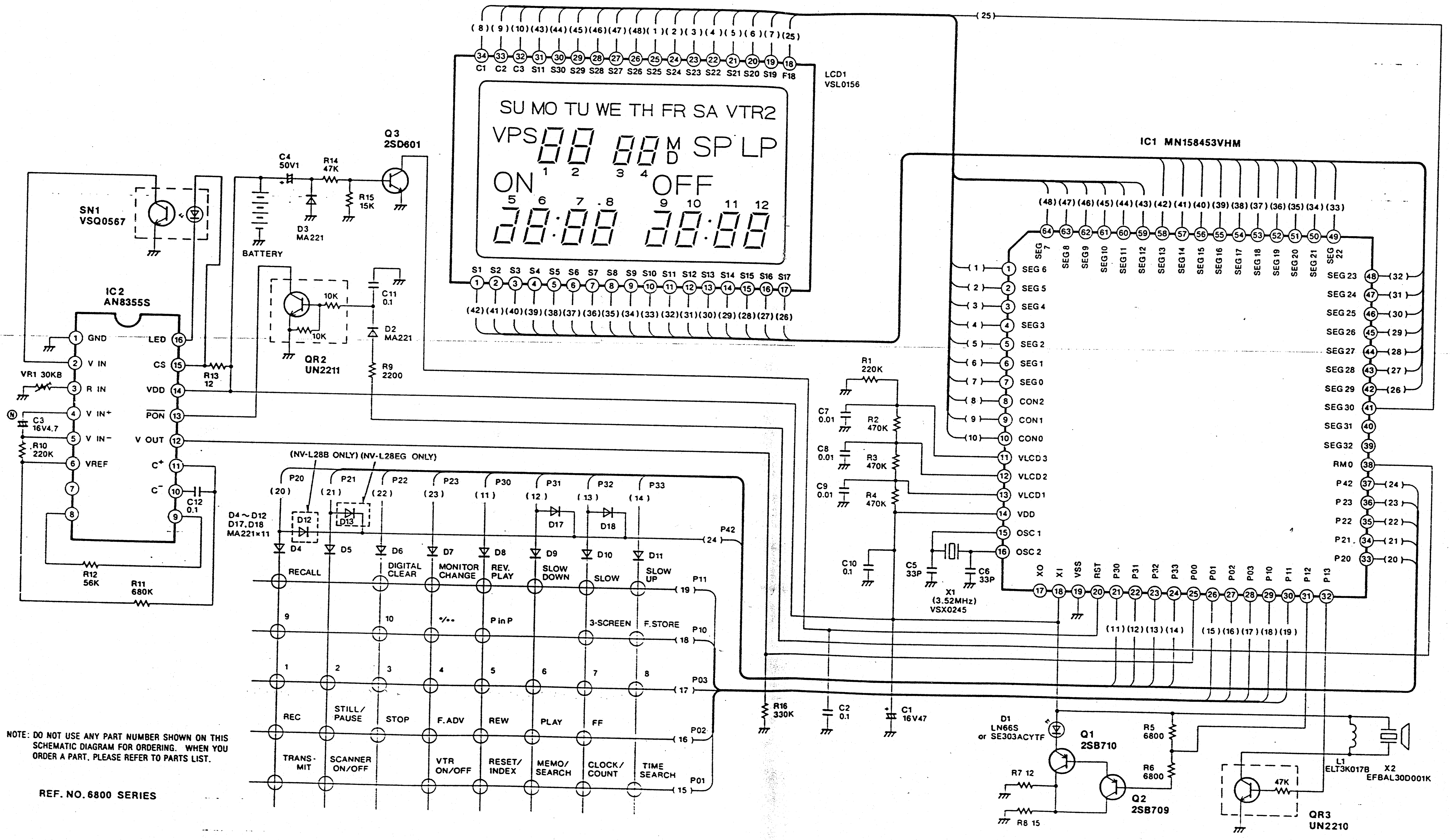
ADDRESS INFORMATION

AUDIO Section	
Transistor	
Q1401	G-9
Q4001	B-12
Q4002	D-11
Transistor & Resistor	
QR4001	C-12
QR4002	D-11
QR4004	D-12
Integrated Circuit	
IC4001	D-12
IC4002	E-13
Test Point	
TP4001	D-13
TP4002	C-12
TP4003	D-12
Adjustment	
VR4002	C-12
Connector	
P1502	G-10
P4001	D-11
P4002	D-11
P4003	D-13

ADDRESS INFORMATION

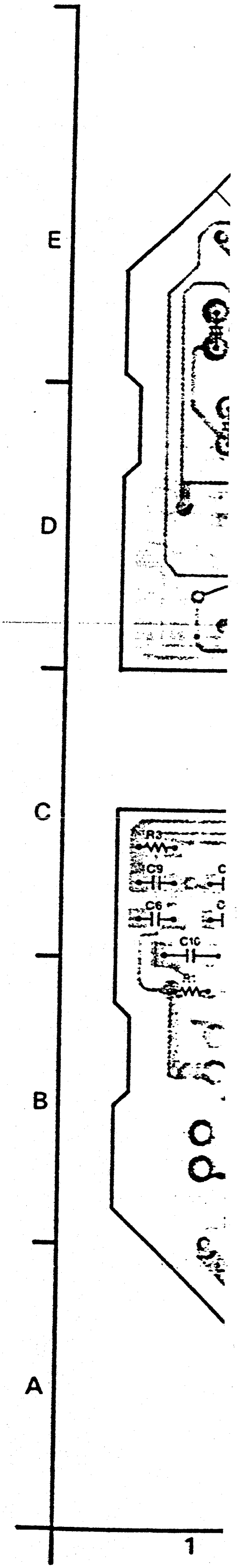
3-36. REMOTE CONTROLLER (BUILD IN DIGITAL SCANNER) SCHEMATIC DIAGRAM
— UNIT NO.: VEQ0989 (NV-L28EG), VEQ0988 (NV-L28B) —

3-37. RE


LCD1
VSL0156
SU MO TU WE TH FR SA VTR2
VPS 88 88 M D SP LP
ON OFF
IC1 MN158453VHM
IC2
AN8355S
SN1
VSQ0567
Q3
2SD601
C4
50V1
R14
47K
R15
15K
D3
MA221
BATTERY
QR2
UN2211
C11
0.1
D2
MA221
R9
2200
R13
12
VR1 30KB
C3
16V4.7
R10
220K
R12
56K
R11
680K
C12
0.1
GND
V IN
R IN
V IN+
V IN−
VREF
LED
CS
VDD
PON
V OUT
C+
C−
(NV-L28B ONLY) (NV-L28EG ONLY)
D4~D12
D17, D18
MA221×11
RECALL
DIGITAL CLEAR
MONITOR CHANGE
REV. PLAY
SLOW DOWN
SLOW
SLOW UP
-/--
P in P
3-SCREEN
F.STORE
REC
STILL/PAUSE
STOP
F.ADV
REW
PLAY
FF
TRANS-MIT
SCANNER ON/OFF
VTR ON/OFF
RESET/INDEX
MEMO/SEARCH
CLOCK/COUNT
TIME SEARCH
P20
P21
P22
P23
P30
P31
P32
P33
P42
P11
P10
P03
P02
P01
R1
220K
C7
0.01
R2
470K
C8
0.01
R3
470K
C9
0.01
R4
470K
C10
0.1
C5
33P
C6
33P
X1
(3.52MHz)
VSX0245
SEG 6
SEG 5
SEG 4
SEG 3
SEG 2
SEG 1
SEG 0
CON 2
CON 1
CON 0
VLCD 3
VLCD 2
VLCD 1
VDD
OSC 1
OSC 2
SEG 23
SEG 24
SEG 25
SEG 26
SEG 27
SEG 28
SEG 29
SEG 30
SEG 31
SEG 32
RM 0
P 42
P 23
P 22
P 21
P 20
R16
330K
C2
0.1
C1
16V47
D1
LN66S
or SE303ACYTF
Q1
2SB710
R5
6800
R6
6800
R7 12
R8 15
Q2
2SB709
QR3
UN2210
47K
L1
ELT3K017B
X2
EFBAL30D001K

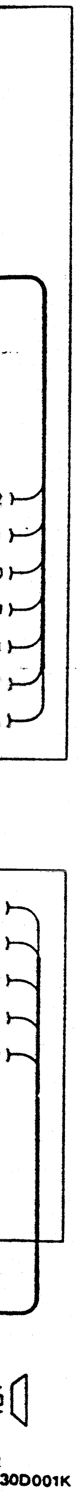
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

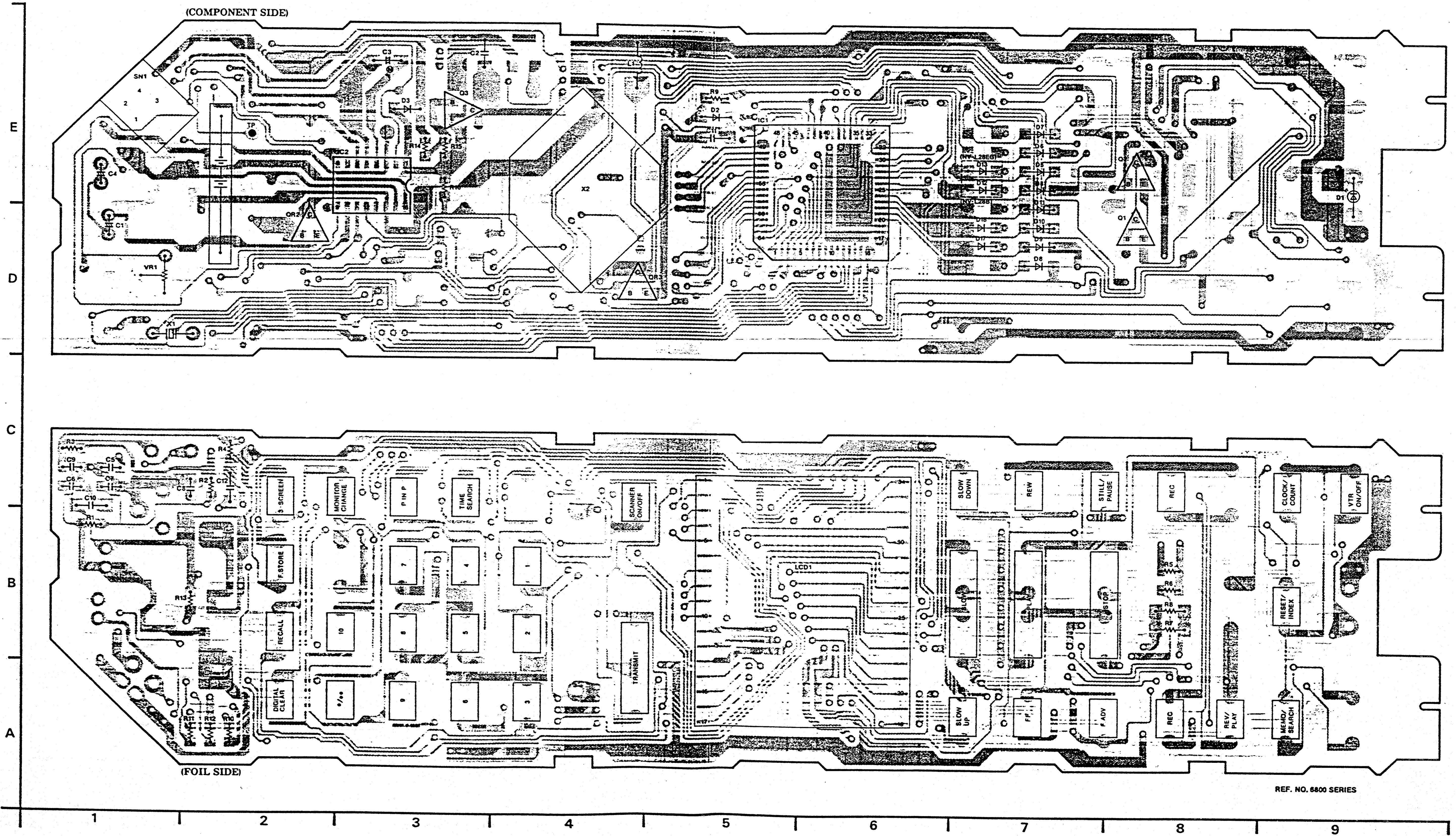
REF. NO. 6800 SERIES



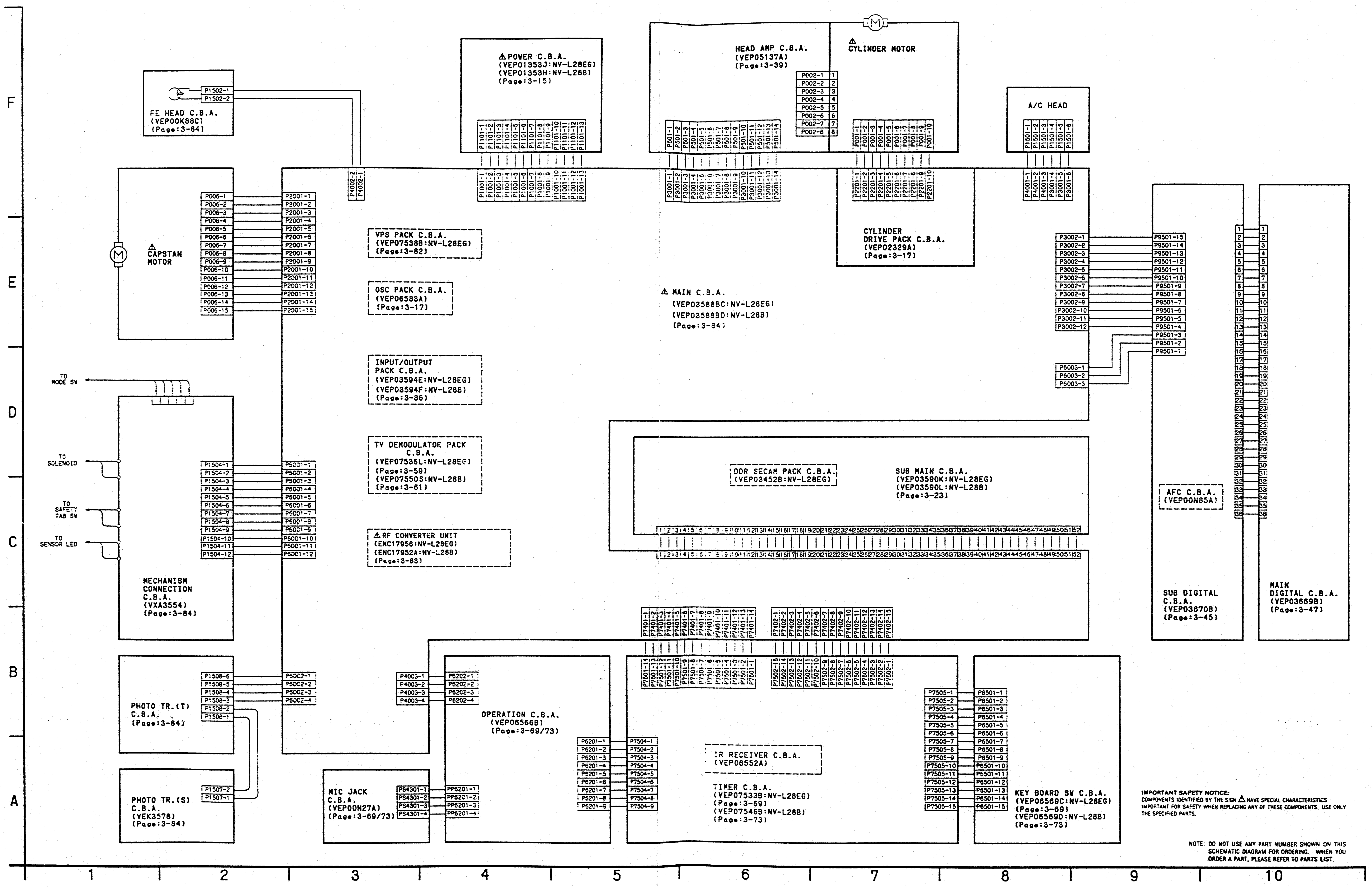
Back Page:
RF CONV. & MAIN C.B.A. Section

3-37. REMOTE CONTROLLER (BUILD IN DIGITAL SCANNER) C.B.A. (VEP66079K: NV-L28EG) (VEP66079H: NV-L28B)




(COMPONENT SIDE)
SN1
TP
C1
C2
C3
C4
D1
D2
D3
D7
D8
D9
D10
D16
D17
IC1
IC2
Q1
Q3
QR2
QR3
R9
R14
R15
R16
VR1
X1
X2
(NV-L28EG)
(NV-L28B)
(FOIL SIDE)
R1
R2
R3
R4
R5
R6
R7
R8
R13
C5
C6
C9
C10
C12
LCD1
3 SCREEN
MONITOR CHANGE
P IN P
TIME SEARCH
SCANNER ON/OFF
SLOW DOWN
REW
STILL/PAUSE
REC
CLOCK/COUNT
VTR ON/OFF
F.STORE
7
4
1
RESET/INDEX
RECALL
10
8
5
2
TRANSMIT
PLAY
STOP
DIGITAL CLEAR
0
9
6
3
SLOW UP
FF
F.ADV
REC
REV/PLAY
MEMO/SEARCH
REF. NO. 6800 SERIES
E
D
C
B
A
1
2
3
4
5
6
7
8
9

3-38. INTERCONNECTION SCHEMATIC DIAGRAM

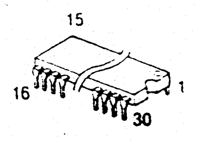

FE HEAD C.B.A.
(VEP00K88C)
(Page:3-84)
P1502-1
P1502-2
⚠ POWER C.B.A.
(VEP01353J:NV-L28EG)
(VEP01353H:NV-L28B)
(Page:3-15)
HEAD AMP C.B.A.
(VEP05137A)
(Page:3-39)
⚠ CYLINDER MOTOR
A/C HEAD
⚠ CAPSTAN MOTOR
CYLINDER DRIVE PACK C.B.A.
(VEP02329A)
(Page:3-17)
VPS PACK C.B.A.
(VEP07538B:NV-L28EG)
(Page:3-82)
OSC PACK C.B.A.
(VEP06583A)
(Page:3-17)
INPUT/OUTPUT PACK C.B.A.
(VEP03594E:NV-L28EG)
(VEP03594F:NV-L28B)
(Page:3-36)
TV DEMODULATOR PACK C.B.A.
(VEP07536L:NV-L28EG)
(Page:3-59)
(VEP07550S:NV-L28B)
(Page:3-61)
⚠ RF CONVERTER UNIT
(ENC17956:NV-L28EG)
(ENC17952A:NV-L28B)
(Page:3-83)
⚠ MAIN C.B.A.
(VEP03588BC:NV-L28EG)
(VEP03588BD:NV-L28B)
(Page:3-84)
DDR SECAM PACK C.B.A.
(VEP03452B:NV-L28EG)
SUB MAIN C.B.A.
(VEP03590K:NV-L28EG)
(VEP03590L:NV-L28B)
(Page:3-23)
AFC C.B.A.
(VEP00N85A)
SUB DIGITAL C.B.A.
(VEP03670B)
(Page:3-45)
MAIN DIGITAL C.B.A.
(VEP03669B)
(Page:3-47)
TO MODE SW
TO SOLENOID
TO SAFETY TAB SW
TO SENSOR LED
MECHANISM CONNECTION C.B.A.
(VXA3554)
(Page:3-84)
PHOTO TR.(T) C.B.A.
(Page:3-84)
PHOTO TR.(S) C.B.A.
(VEK3578)
(Page:3-84)
MIC JACK C.B.A.
(VEP00N27A)
(Page:3-69/73)
OPERATION C.B.A.
(VEP06566B)
(Page:3-69/73)
IR RECEIVER C.B.A.
(VEP06552A)
TIMER C.B.A.
(VEP07533B:NV-L28EG)
(Page:3-69)
(VEP07546B:NV-L28B)
(Page:3-73)
KEY BOARD SW C.B.A.
(VEP06569C:NV-L28EG)
(Page:3-69)
(VEP06569D:NV-L28B)
(Page:3-73)
P1101-1 … P1101-13
P1001-1 … P1001-13
P501-1 … P501-14
P3001-1 … P3001-14
P002-1 … P002-8
P001-1 … P001-10
P2201-1 … P2201-10
P1501-1 … P1501-6
P4001-1 … P4001-6
P4002-1
P4002-2
P006-1 … P006-15
P2001-1 … P2001-15
P3002-1 … P3002-12
P9501-1 … P9501-15
P6003-1
P6003-2
P6003-3
P1504-1 … P1504-12
P5001-1 … P5001-11
P6001-1 … P6001-12
P1508-1 … P1508-6
P5002-1 … P5002-4
P1507-1
P1507-2
P4003-1 … P4003-4
P6202-1 … P6202-4
PS4301-1 … PS4301-4
PP6201-1 … PP6201-4
P6201-1 … P6201-9
P7504-1 … P7504-9
P7401-1 … P7401-14
P7402-1 … P7402-15
P7501-1 … P7501-14
P7502-1 … P7502-15
P7505-1 … P7505-15
P6501-1 … P6501-15
1 … 36
1 … 52
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SPECIFIED PARTS.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-39. ICs & TRs INFORMATION

GENERAL CIRCUIT PARTS



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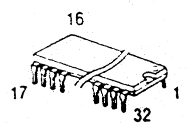
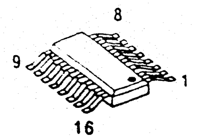
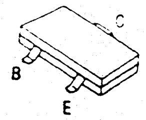


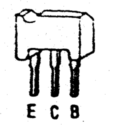
BA7274S
BA7766AS



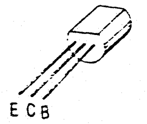
MC14053BF
CF77384NS
MN4066BS



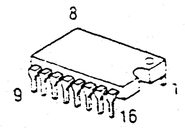
2SA1034 2SD1328
2SA1022 2SD601
2SB709 2SD602
2SB710 2SC2405
2SC2295



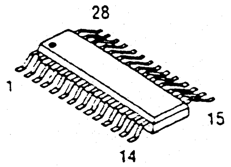
2SB641 2SD1330
2SB643 2SD637
2SB790 2SD638
2SC2206 2SD973
2SC2377



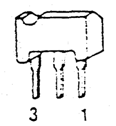
2SD893
2SC1047



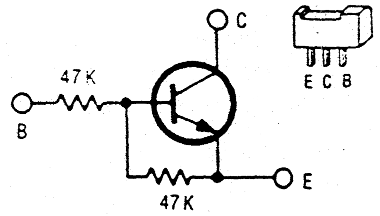
AN5043
MN1226
LA7800
MN12261



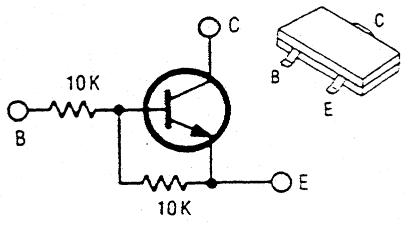
MN15522VMS
MN6559S



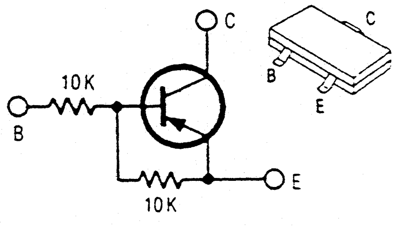
MN1280L
MN1280S
MN1280R


C
E C B
47K
B
47K
E

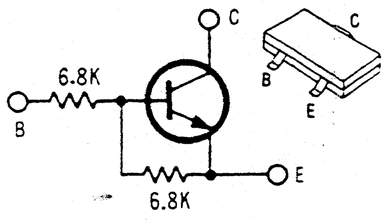
DTC144EA
UN1213


C
C
10K
B
E
B
10K
E

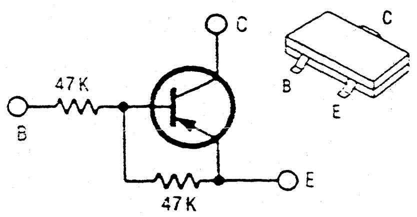
UN2211
DTC114EK


C
C
10K
B
E
B
10K
E

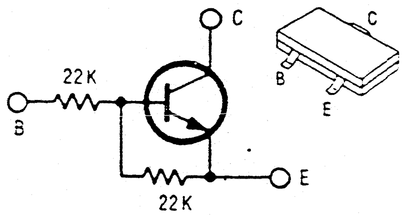
UN2111
DTA114EK


C
C
6.8K
B
E
B
6.8K
E

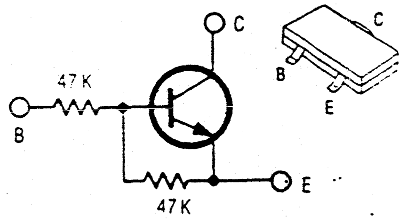
DTC363EK


C
C
47K
B
E
B
47K
E

UN2213
DTA144EK

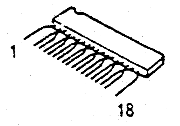

C
C
22K
B
E
B
22K
E

UN2212
DTC124EK


C
C
47K
B
E
B
47K
E

UN2113
DTC144EK

SUB MAIN



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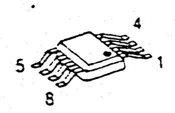
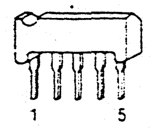


BA6305F



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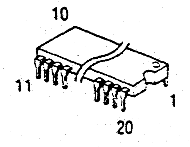
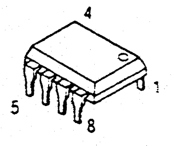
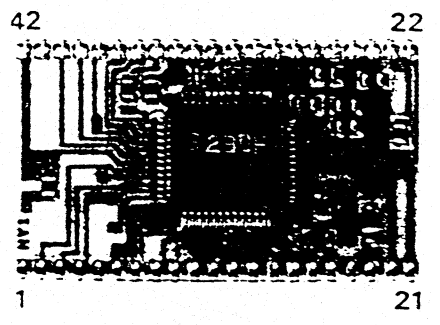


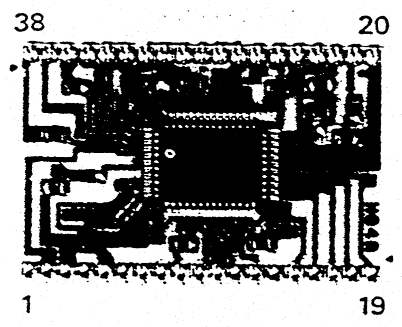
M52063SP



MSM6965-3RS



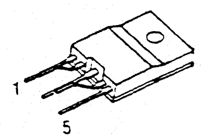
VEFH03D



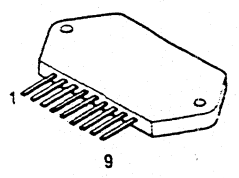
VEFH04F

Back Page:
INTERCONNECTION Section

POWER

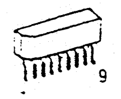


STRD1816A



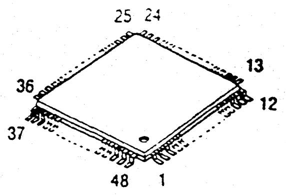
STK5392

TV DEMODULATOR PACK

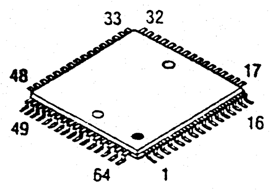


AN5421

SUB DIGITAL


25 24
13
36
12
37
48
1

AN3172NFB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17
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16
49
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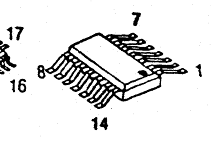
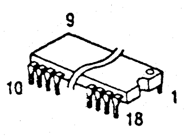
AN3182NFBP

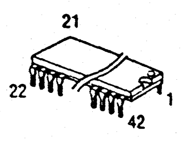


μPD4066BG

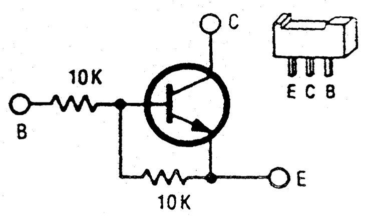
VPS PACK



SAA4700

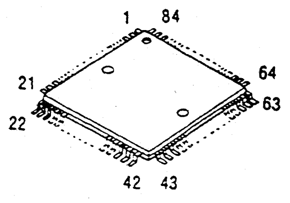


MN158413VHW

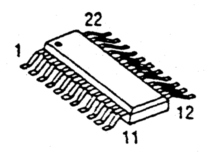

C
E C B
10K
B
10K
E

DTC114EA
UN1211

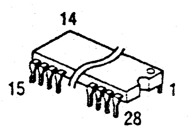
MAIN DIGITAL


1 84
21
64
63
22
42 43

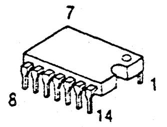
MN4714F



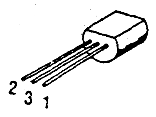
MN65531S



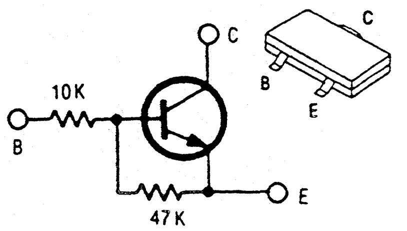
MN15522VML



MN6790

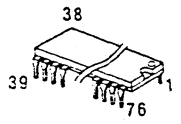


AN78L05

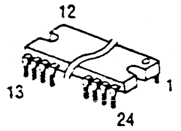

C
C
10K
B
E
B
47K
E

UN2214
DTC114YK

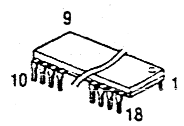
SERVO & SYSTEM CONTROL Section



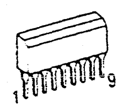
MN6740VCPK



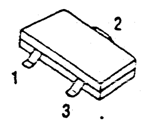
BA6435S



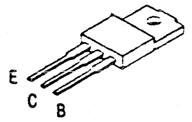
AN3814K



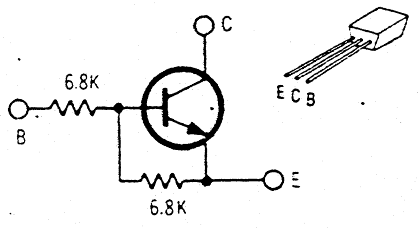
μPC358HA
μPC393HA



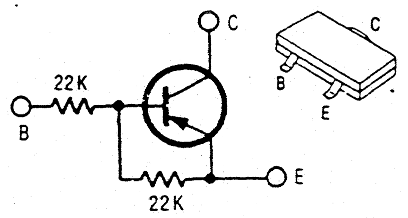
MN12821R



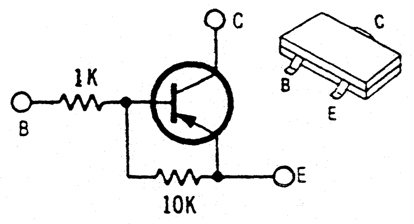
2SD1273


C
6.8K
E C B
B
6.8K
E

2SD1676

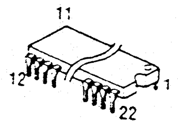

C
C
22K
B
E
B
22K
E

UN2112
DTA124EK

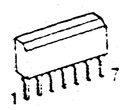

C
C
1K
B
E
B
10K
E

UN2119
DTA113ZK

INPUT/OUTPUT PACK

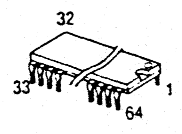


LA7150

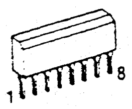


TA7374P

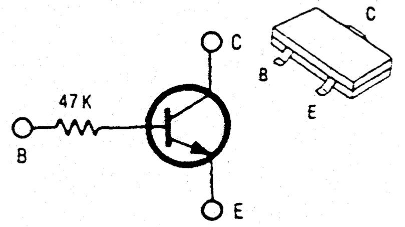
TIMER



M37422V4AF
MN187125VHP

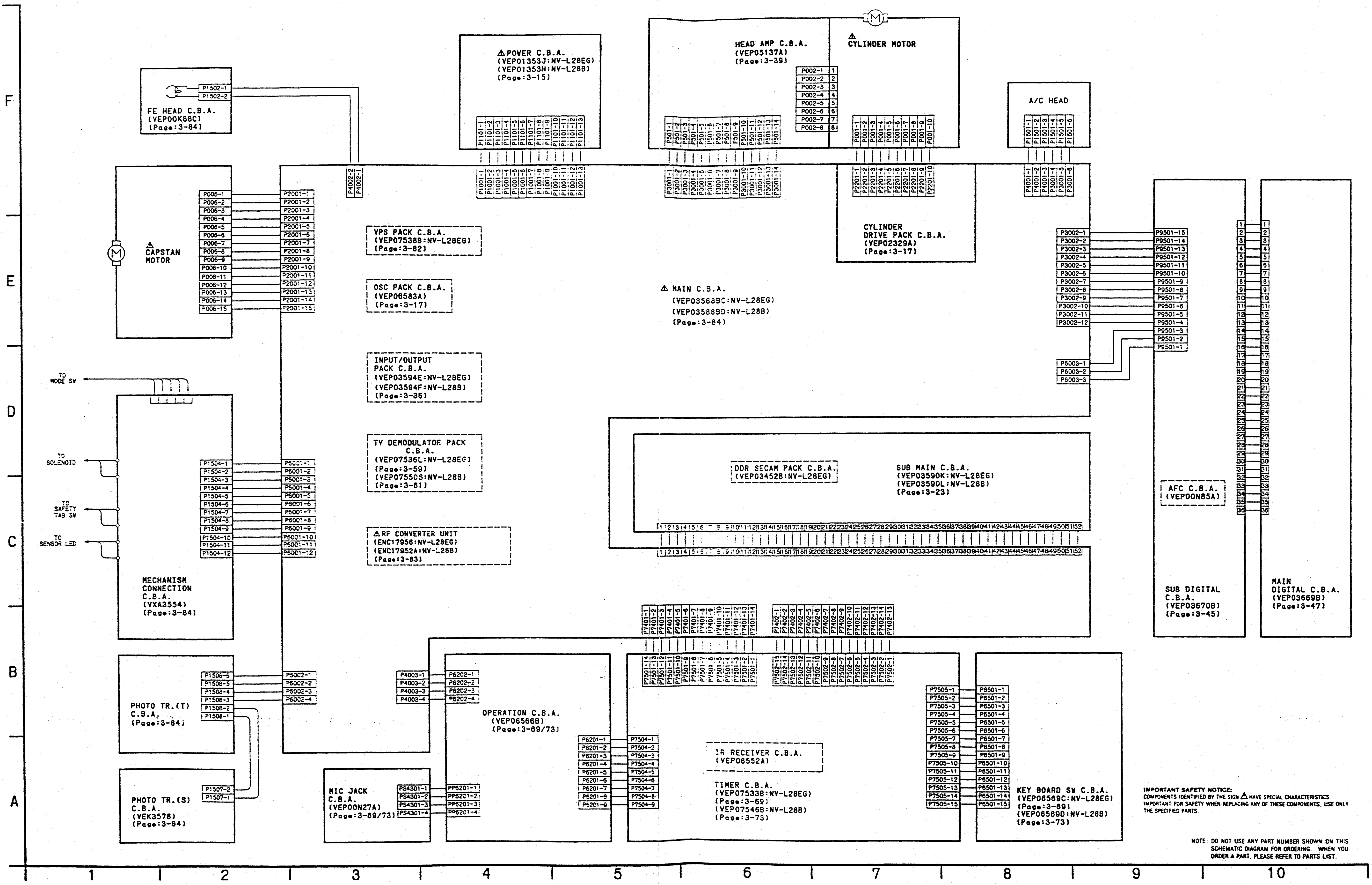


μPC1490HA



UN2216
DTC143TK

3-38. INTERCONNECTION SCHEMATIC DIAGRAM


FE HEAD C.B.A.
(VEP00K88C)
(Page:3-84)
POWER C.B.A.
(VEP01353J:NV-L28EG)
(VEP01353H:NV-L28B)
(Page:3-15)
HEAD AMP C.B.A.
(VEP05137A)
(Page:3-39)
CYLINDER MOTOR
A/C HEAD
CAPSTAN MOTOR
VPS PACK C.B.A.
(VEP07538B:NV-L28EG)
(Page:3-82)
OSC PACK C.B.A.
(VEP06583A)
(Page:3-17)
INPUT/OUTPUT PACK C.B.A.
(VEP03594E:NV-L28EG)
(VEP03594F:NV-L28B)
(Page:3-36)
TV DEMODULATOR PACK C.B.A.
(VEP07536L:NV-L28EG)
(Page:3-59)
(VEP07550S:NV-L28B)
(Page:3-61)
RF CONVERTER UNIT
(ENC17956:NV-L28EG)
(ENC17952A:NV-L28B)
(Page:3-83)
CYLINDER DRIVE PACK C.B.A.
(VEP02329A)
(Page:3-17)
MAIN C.B.A.
(VEP03588BC:NV-L28EG)
(VEP03588BD:NV-L28B)
(Page:3-84)
DDR SECAM PACK C.B.A.
(VEP03452B:NV-L28EG)
SUB MAIN C.B.A.
(VEP03590K:NV-L28EG)
(VEP03590L:NV-L28B)
(Page:3-23)
AFC C.B.A.
(VEP00N85A)
SUB DIGITAL C.B.A.
(VEP03670B)
(Page:3-45)
MAIN DIGITAL C.B.A.
(VEP03669B)
(Page:3-47)
TO MODE SW
TO SOLENOID
TO SAFETY TAB SW
TO SENSOR LED
MECHANISM CONNECTION C.B.A.
(VXA3554)
(Page:3-84)
PHOTO TR.(T) C.B.A.
(Page:3-84)
PHOTO TR.(S) C.B.A.
(VEK3578)
(Page:3-84)
MIC JACK C.B.A.
(VEP00N27A)
(Page:3-69/73)
OPERATION C.B.A.
(VEP06566B)
(Page:3-69/73)
IR RECEIVER C.B.A.
(VEP06552A)
TIMER C.B.A.
(VEP07533B:NV-L28EG)
(Page:3-69)
(VEP07546B:NV-L28B)
(Page:3-73)
KEY BOARD SW C.B.A.
(VEP06569C:NV-L28EG)
(Page:3-69)
(VEP06569D:NV-L28B)
(Page:3-73)
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN △ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SPECIFIED PARTS.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

SERVICE INFORMATION

[1].HOW TO CHECK THE CRACKED CHIP PART

(1) Apply heat to the soldered portions of chip part using a soldering iron for about 2–3 seconds.
(2) If the chip part is faulty,it will be broken or cracked.

Caution: Do not leave soldering iron on the PCB too long as damage may occur to the PCB or the chip parts.

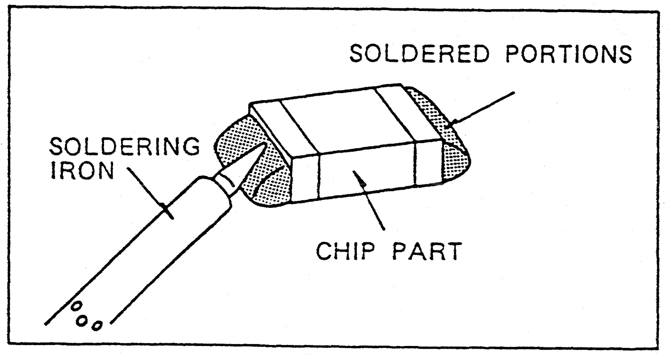

SOLDERED PORTIONS
SOLDERING IRON
CHIP PART

FIG. G1

Note: Regarding intermittent faults
The main causes of these faults are poor soldering and cracked chip parts.

[2].HOW TO REPLACE THE CHIP PART

1) REMOVAL (RESISTOR, CAPACITOR, etc...)

(1) Presolder the one side of soldering portion for chip part and grasp the chip part by tweezers.

(2) Melt the presoldered portion. And then remove the chip part with a twisting motion while melting the soldering portion of another side quickly.

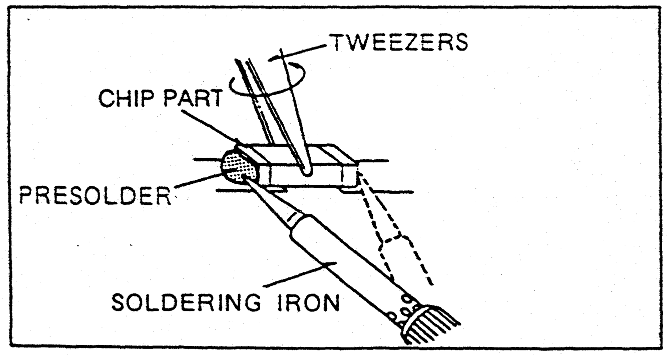

TWEEZERS
CHIP PART
PRESOLDER
SOLDERING IRON

FIG. G2

2) REMOVAL (transistor, diode, etc...)

(1) Grasp the chip part with tweezers and melt the solder of one lead.

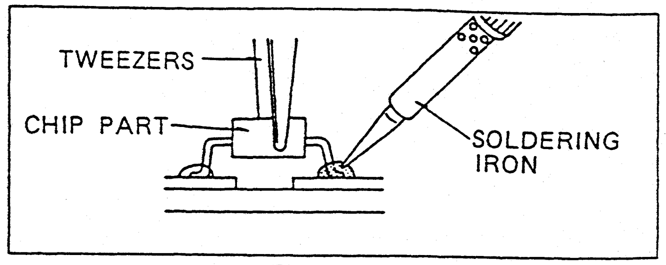

TWEEZERS
CHIP PART
SOLDERING IRON

FIG. G3

(2) Lift the side of that lead upward.

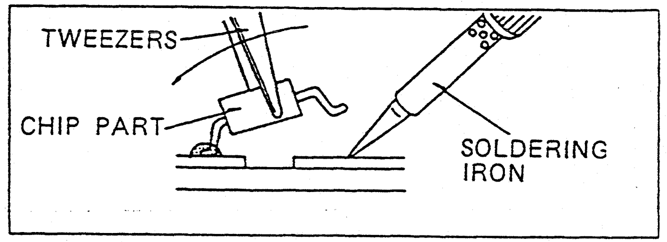

TWEEZERS
CHIP PART
SOLDERING IRON

FIG. G4

Caution: Do not lift the chip part too high as damage may occur to the PCB or the leads that are still soldered on the PCB.

(3) Simultaneously heat the solder of the two remaining leads and lift part to remove.

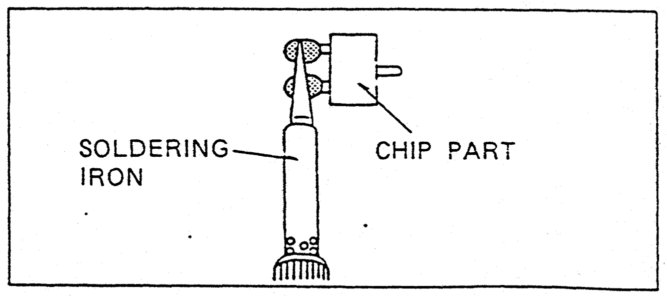

SOLDERING IRON
CHIP PART

FIG. G5

3) INSTALLATION

(1) Presolder the one side of contact point on the circuit board.

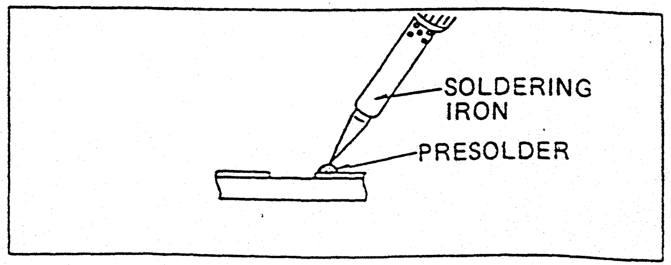

SOLDERING IRON
PRESOLDER

FIG. G6

(2) To install the chip part,hold in position using tweezers, apply heat to the pre–soldered portions using a fine tip soldering iron.
(3) Solder the other side of the chip part.
(4) Check your soldering.

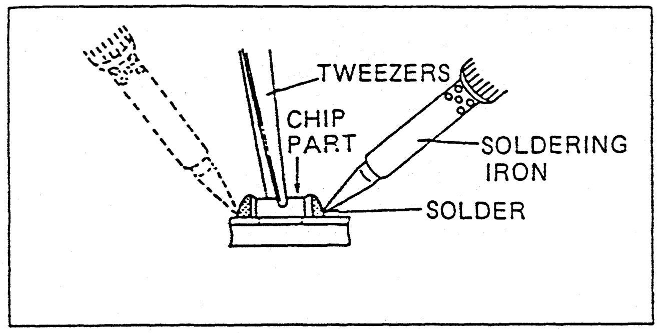

TWEEZERS
CHIP PART
SOLDERING IRON
SOLDER

FIG. G7

[3].HOW TO REMOVE THE FLAT-IC

(WITH HOT-AIR FLAT–IC DESOLDERING MACHINE)

(FOR EXAMPLE)

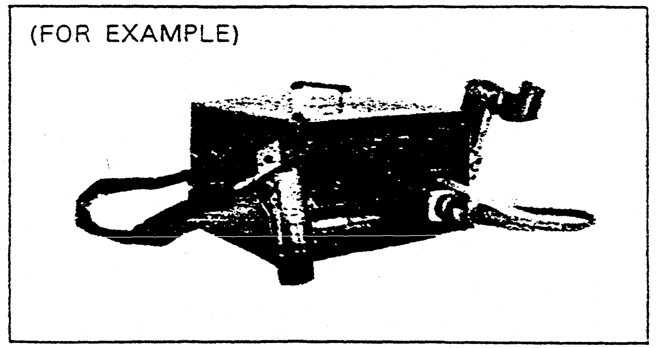


FIG. G8

(1) Prepare the HOT–AIR FLAT–IC DESOLDERING MACHINE. And then apply hot air to FLAT–IC about 5 ∼ 8 seconds.

(2) Remove the FLAT–IC with tweezers while applying the hot air.

Caution: Do not supply the hot air to the chip parts around the Flat–IC for long time as as damage may occur to the chip parts around the Flat –IC.

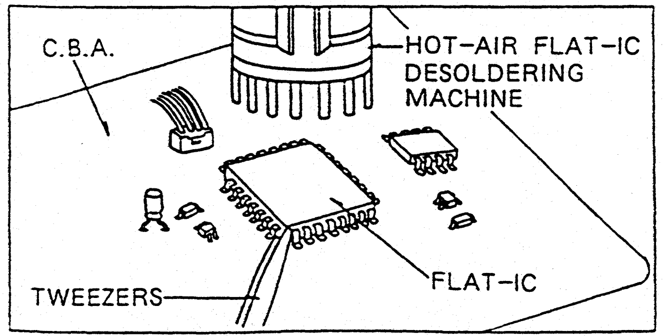

C.B.A.
HOT–AIR FLAT–IC DESOLDERING MACHINE
FLAT–IC
TWEEZERS

FIG. G9

(WITH SOLDERING IRON)

(1) Using solder braid remove the solder from all pins of the Flat–IC.
When you use the solder flux which is applied to all pins of the Flat–IC,you can remove it easily.

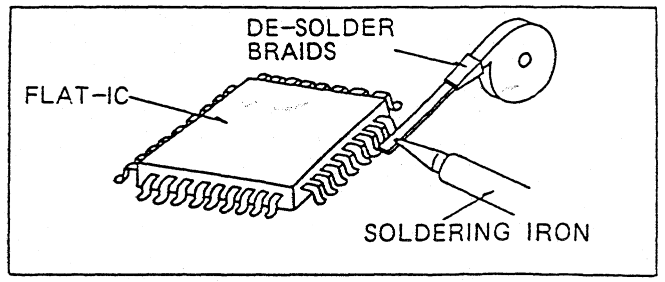

DE–SOLDER BRAIDS
FLAT–IC
SOLDERING IRON

FIG. G10

(2) Lift each lead of the Flat–IC upward one by one using a sharp pin or non solder wire(iron wire),while heating the pins using a fine tip soldering iron or a hot air blower.

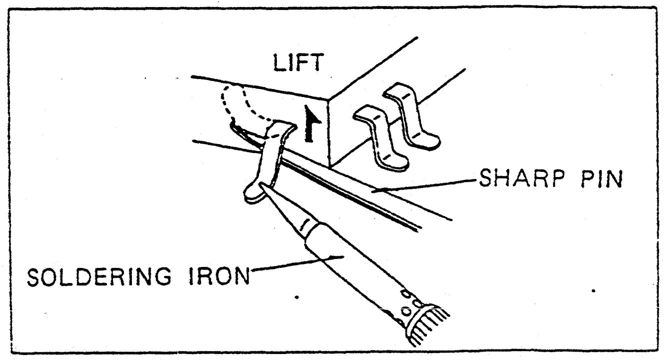

LIFT
SHARP PIN
SOLDERING IRON

FIG. G11

(WITH IRON WIRE)

(1) Affix the wire to workbench or solid mounting point as shown in FIG.G12.
(2) Pull up wire as the solder melts so as to lift the IC lead from the PCB contact ped,while heating the pins using a fine tip soldering iron or hot air blower.

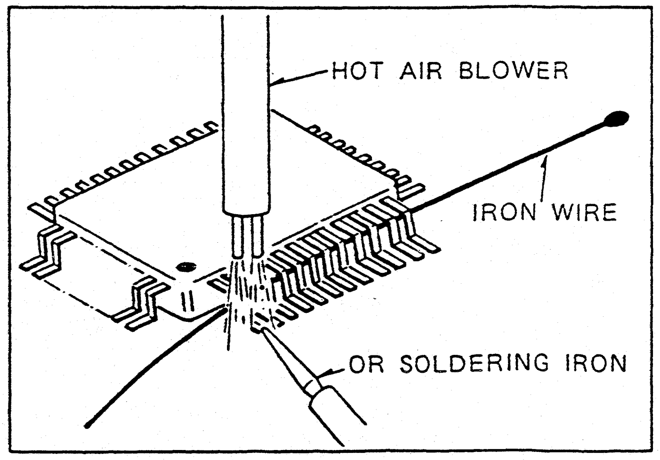
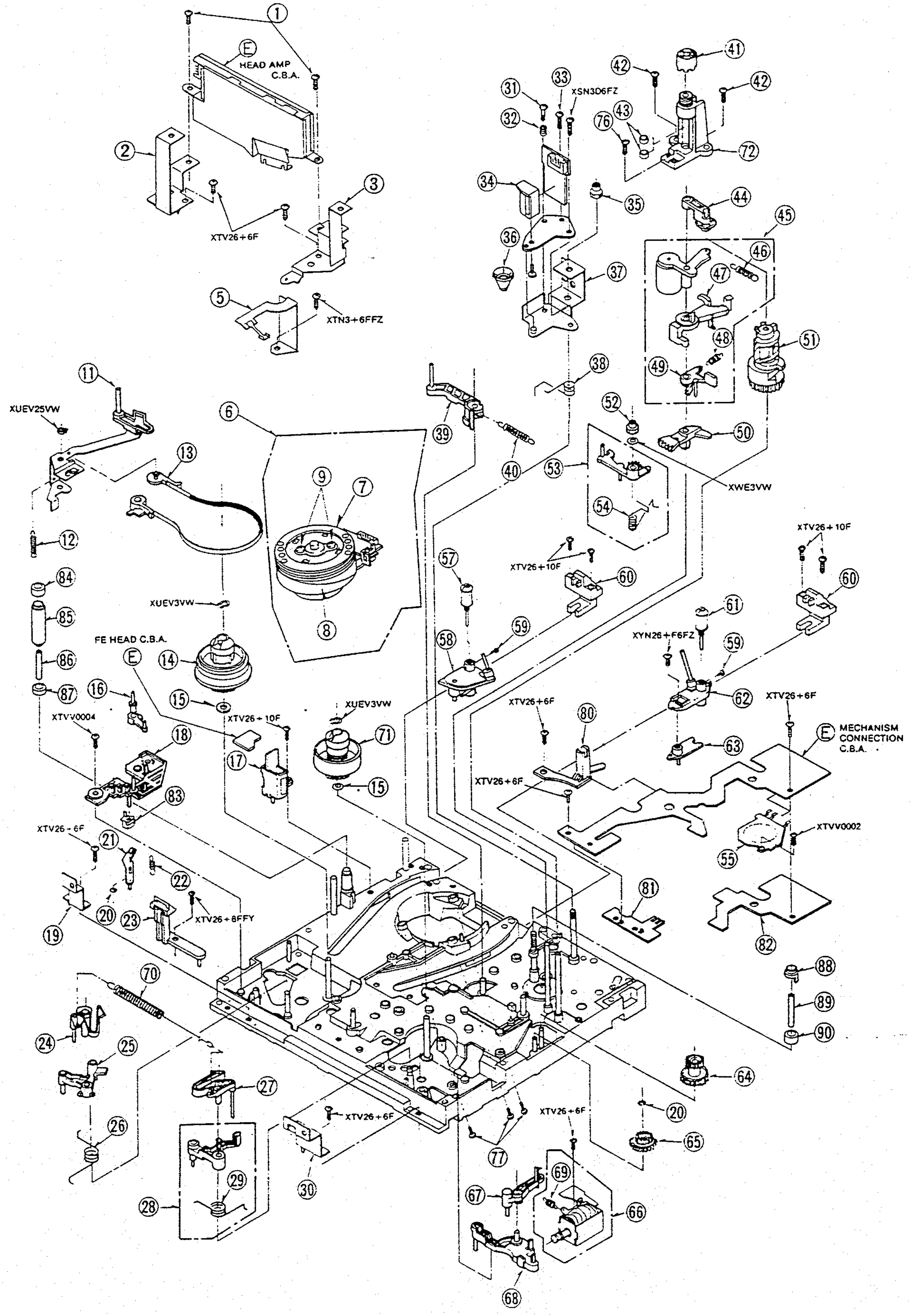

HOT AIR BLOWER
IRON WIRE
OR SOLDERING IRON

FIG.G12

Note: When using a soldering iron care must be taken to ensure that the Flat IC is not being held by glue before it is the PCB may be damaged if force is used.

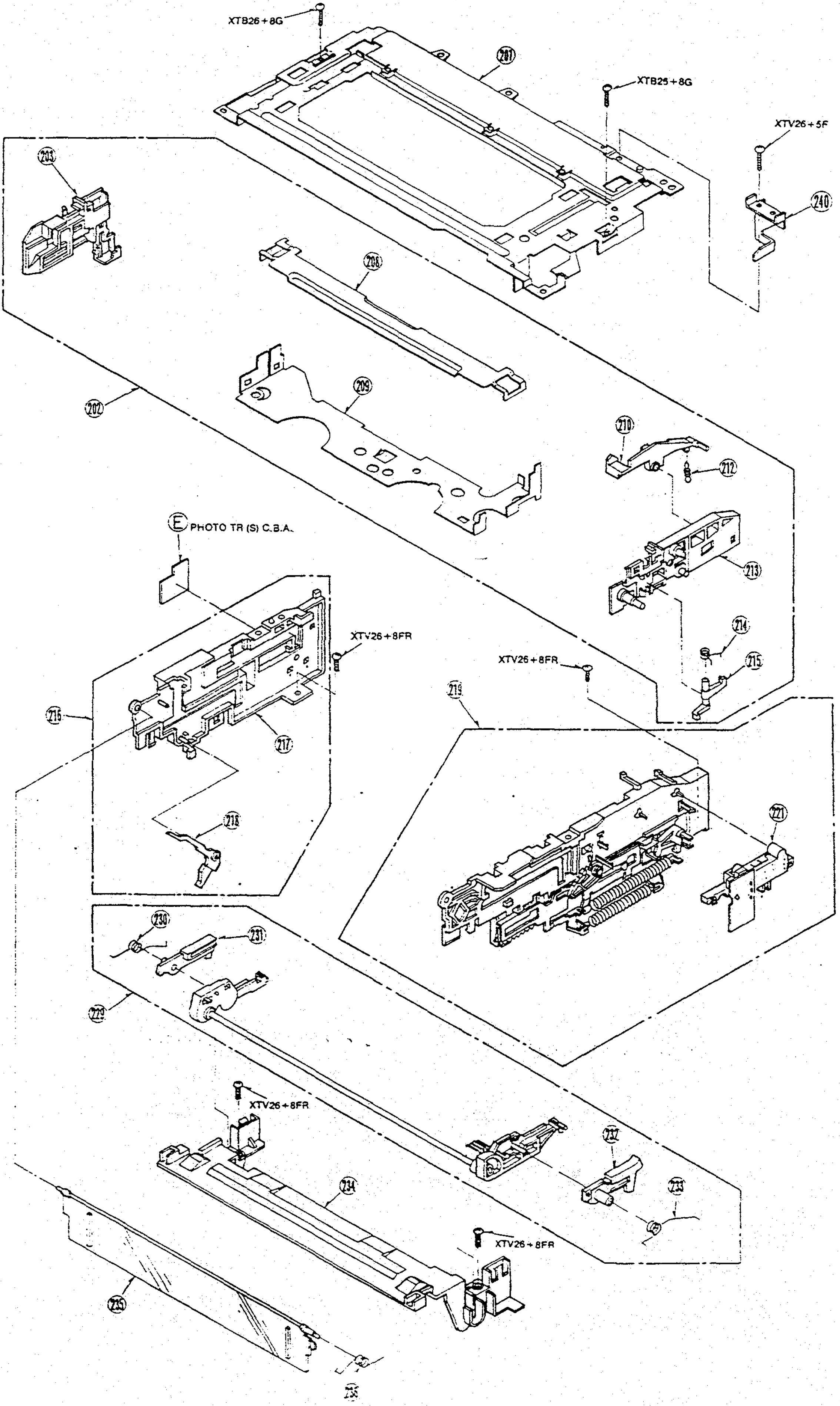
SECTION 4
EXPLODED VIEWS & PARTS LIST

4-1. EXPLODED VIEW ❶ CHASSIS PARTS SECTION (1)

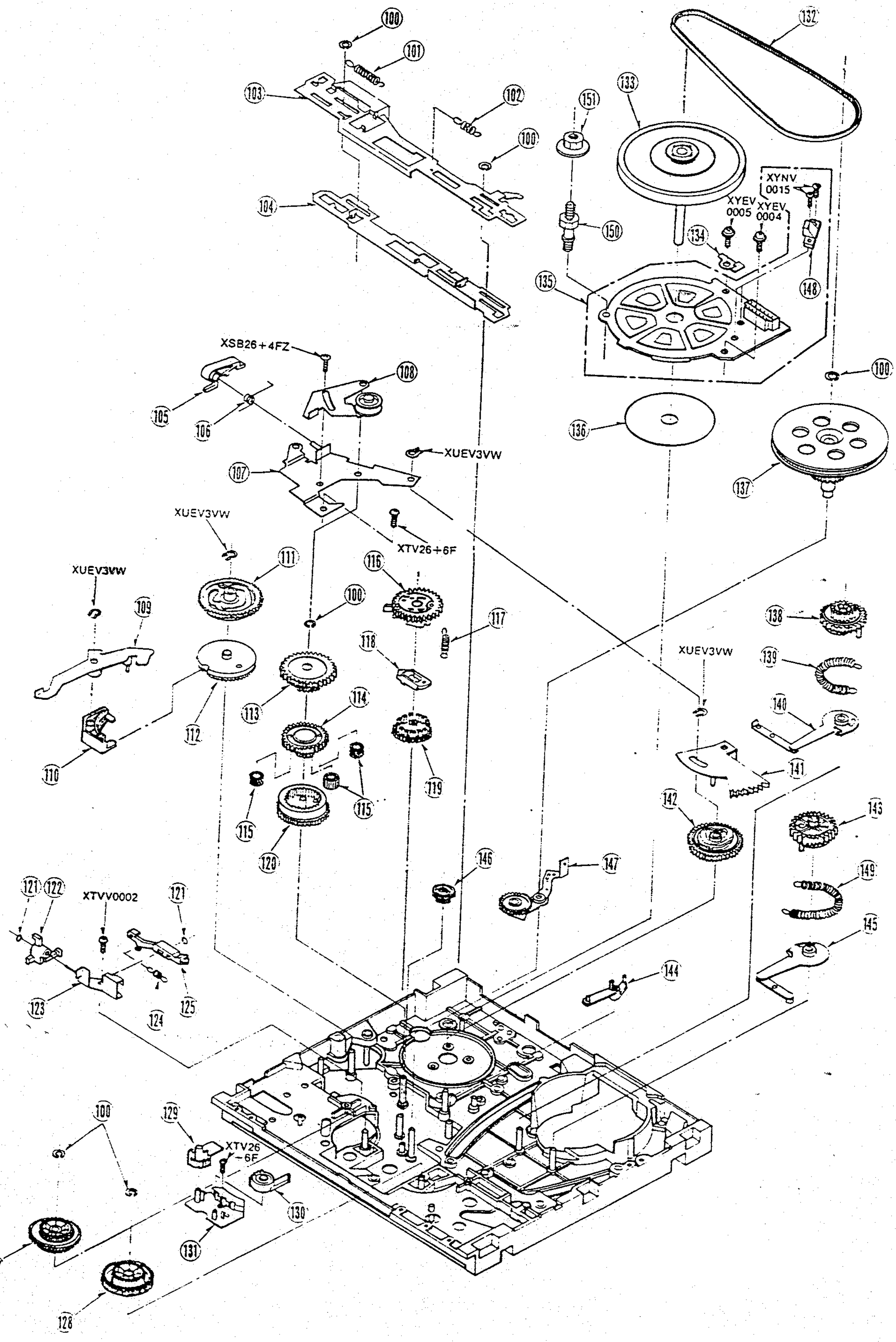


①
Ⓔ
HEAD AMP C.B.A.
②
③
XTV26+6F
⑤
XTN3+6FFZ
㊶
㊷
㊷
㉛
㉝
XSN3D6FZ
㉜
㊸
(76)
(72)
㉞
㉟
㊹
㊺
㊱
㊻
㊲
㊼
㊽
(51)
⑪
XUEV25VW
⑥
㊳
㊴
㊾
(52)
(50)
⑬
⑨
⑦
㊵
(53)
XWE3VW
(54)
⑫
XTV26+10F
(57)
XTV26+10F
(60)
(60)
(84)
XUEV3VW
(85)
FE HEAD C.B.A.
Ⓔ
⑭
⑧
(58)
(59)
(61)
XYN26+F6FZ
(59)
(86)
(87)
⑯
⑮
XUEV3VW
(62)
XTV26+6F
XTVV0004
XTV26+10F
(71)
(80)
XTV26+6F
Ⓔ
MECHANISM CONNECTION C.B.A.
⑱
(63)
⑰
⑮
XTV26+6F
(83)
XTVV0002
XTV26-6F
㉑
(55)
㉒
⑳
㉓
XTV26+8FFY
(81)
⑲
(82)
(70)
(88)
(89)
(90)
㉔
㉕
㉗
(64)
㉖
XTV26+6F
⑳
XTV26+6F
(77)
(65)
㉙
(69)
㉘
㉚
(67)
(66)
(68)

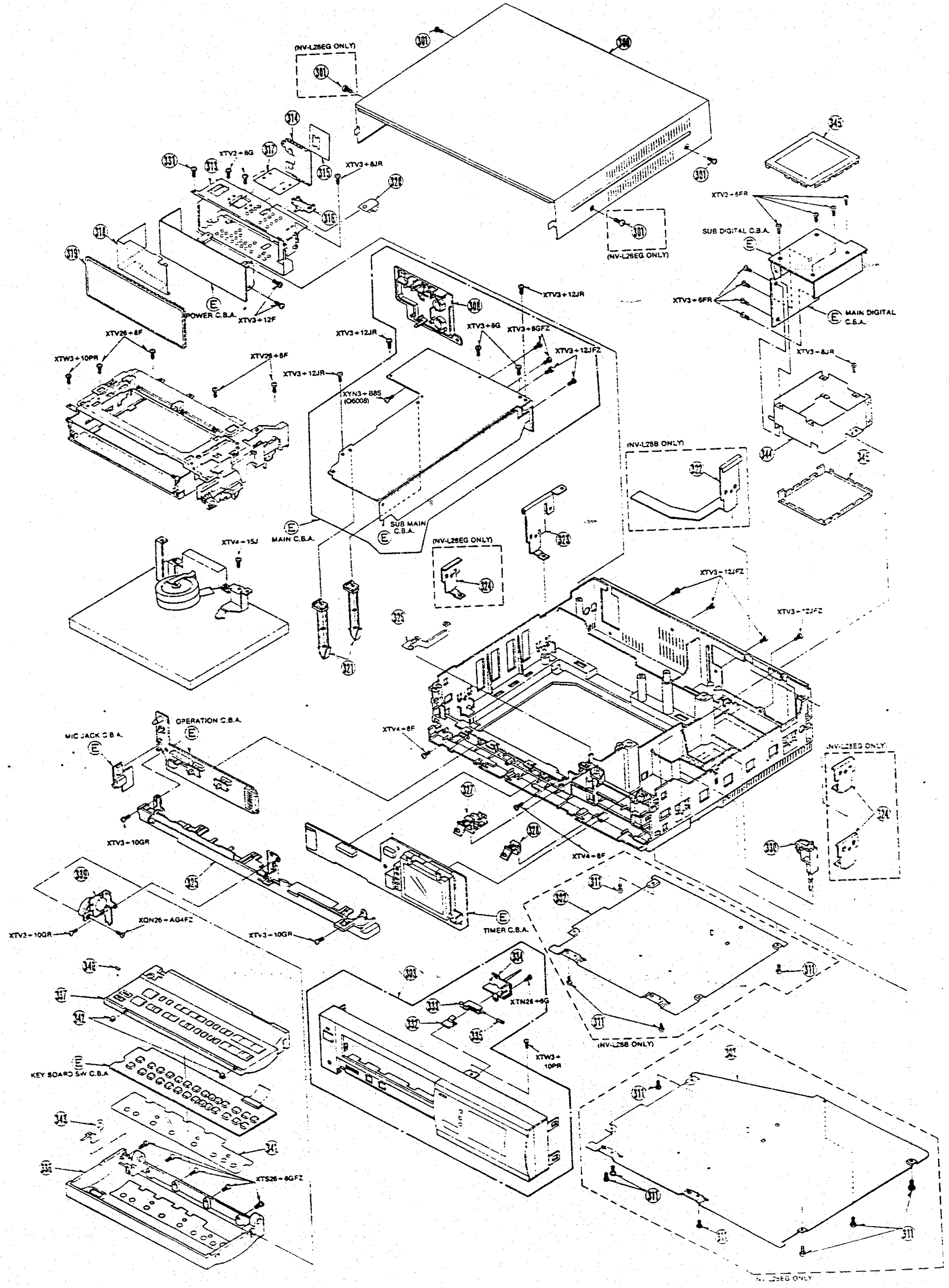
❷ CHASSIS PARTS SECTION (2)


XTB26+8G
201
XTB25+8G
XTV26+5F
240
203
208
209
202
210
212
213
214
215
Ⓔ PHOTO TR (S) C.B.A.
XTV26+8FR
XTV26+8FR
216
217
218
219
221
230
231
229
XTV26+8FR
232
233
234
XTV26+8FR
235
236

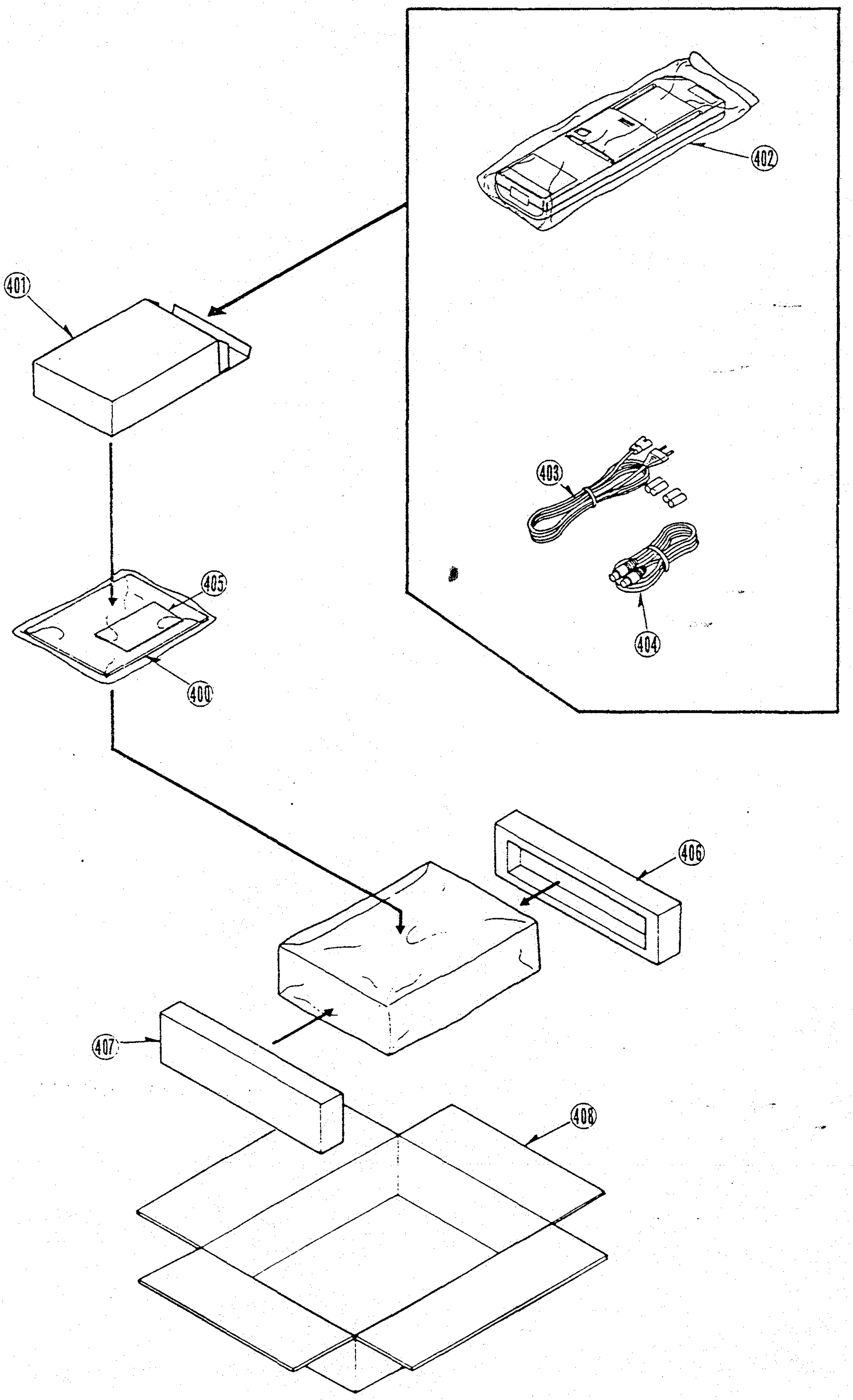
③ CASSETTE UP MECHANISM SECTION


100
101
103
102
100
151
133
132
XYNV 0015
XYEV 0005
XYEV 0004
104
150
134
135
148
XSB26+4FZ
108
100
105
106
136
137
XUEV3VW
107
XUEV3VW
XTV26+6F
111
116
XUEV3VW
109
100
117
138
118
XUEV3VW
139
113
114
112
140
110
119
141
115
115
142
143
120
146
147
149
121
122
XTVV0002
121
145
144
123
124
125
100
129
XTV26 -6F
130
131
127
128

❹ CASING PARTS SECTION


301
300
(NV-L28EG ONLY)
301
314
XTV3+8G
317
331
313
315
XTV3+8JR
326
316
301
(NV-L26EG ONLY)
318
319
E
POWER C.B.A.
XTV3+12F
XTV26+8F
XTW3+10PR
XTV26+8F
XTV3+12JR
XTV3+12JR
XYN3+B8S
(Q6008)
308
XTV3+12JR
XTV3+8G
XTV3+8GFZ
XTV3+12JFZ
E
MAIN C.B.A.
E
SUB MAIN
C.B.A.
345
XTV3+6FR
SUB DIGITAL C.B.A.
E
XTV3+6FR
E
MAIN DIGITAL
C.B.A.
XTV3+8JR
344
345
(NV-L28B ONLY)
322
323
(NV-L28EG ONLY)
324
XTV4+15J
321
325
XTV3+12JFZ
XTV3+12JFZ
OPERATION C.B.A.
E
MIC JACK C.B.A.
E
XTV4+8F
327
328
XTV4+8F
(NV-L28EG ONLY)
324
330
XTV3+10GR
339
325
XQN26+AG4FZ
XTV3+10GR
XTV3+10GR
E
TIMER C.B.A.
311
302
311
311
(NV-L28B ONLY)
346
337
342
334
303
333
XTN26+6G
332
335
XTW3+
10PR
E
KEY BOARD SW C.B.A.
343
341
336
XTS26+8GFZ
302
311
311
311
311
(NV-L28EG ONLY)

❺ PACKING PARTS SECTION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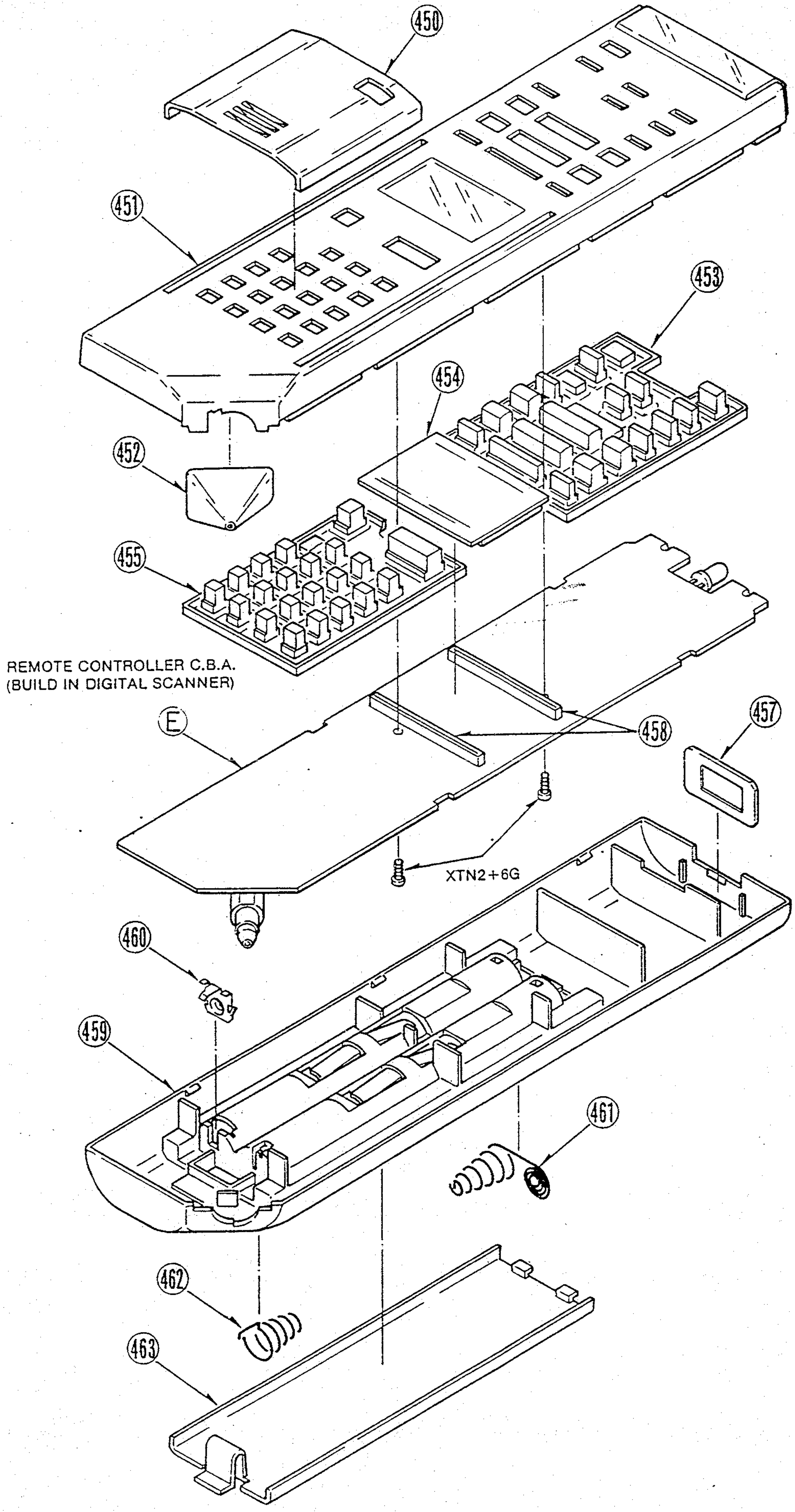
❻ REMOTE CONTROLLER (BUILD IN DIGITAL SCANNER) UNIT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455
REMOTE CONTROLLER C.B.A.
(BUILD IN DIGITAL SCANNER)
E
458
457
XTN2+6G
460
459
461
462
463